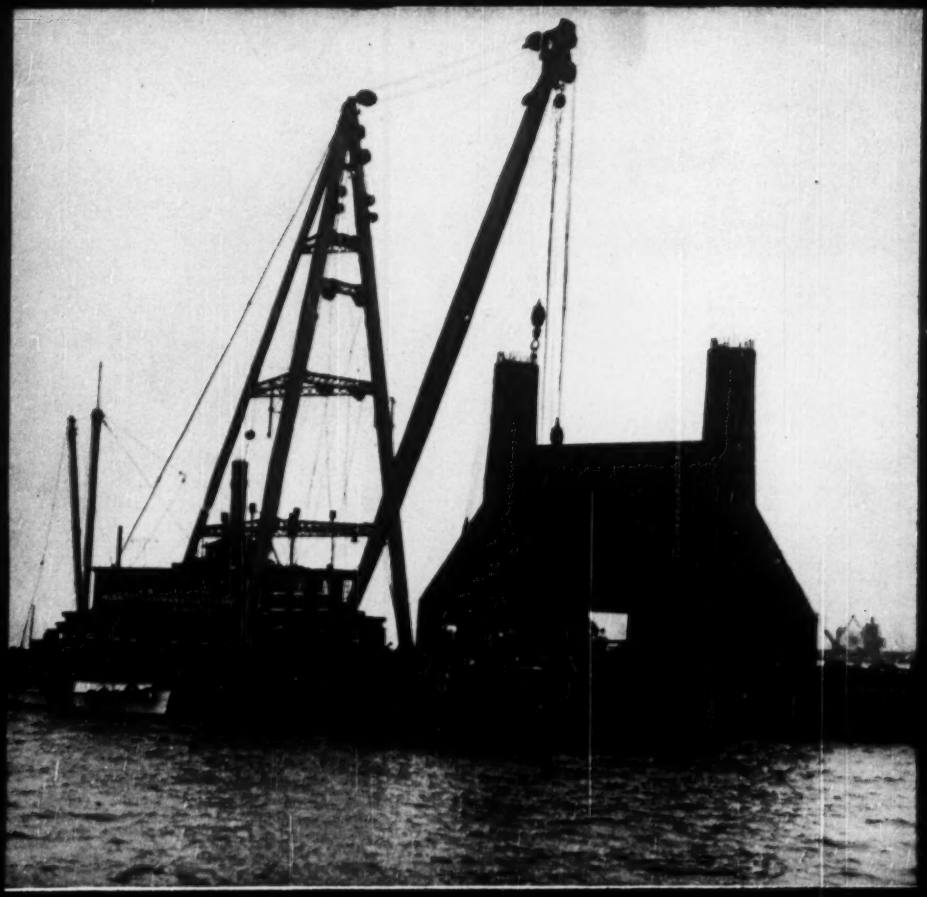
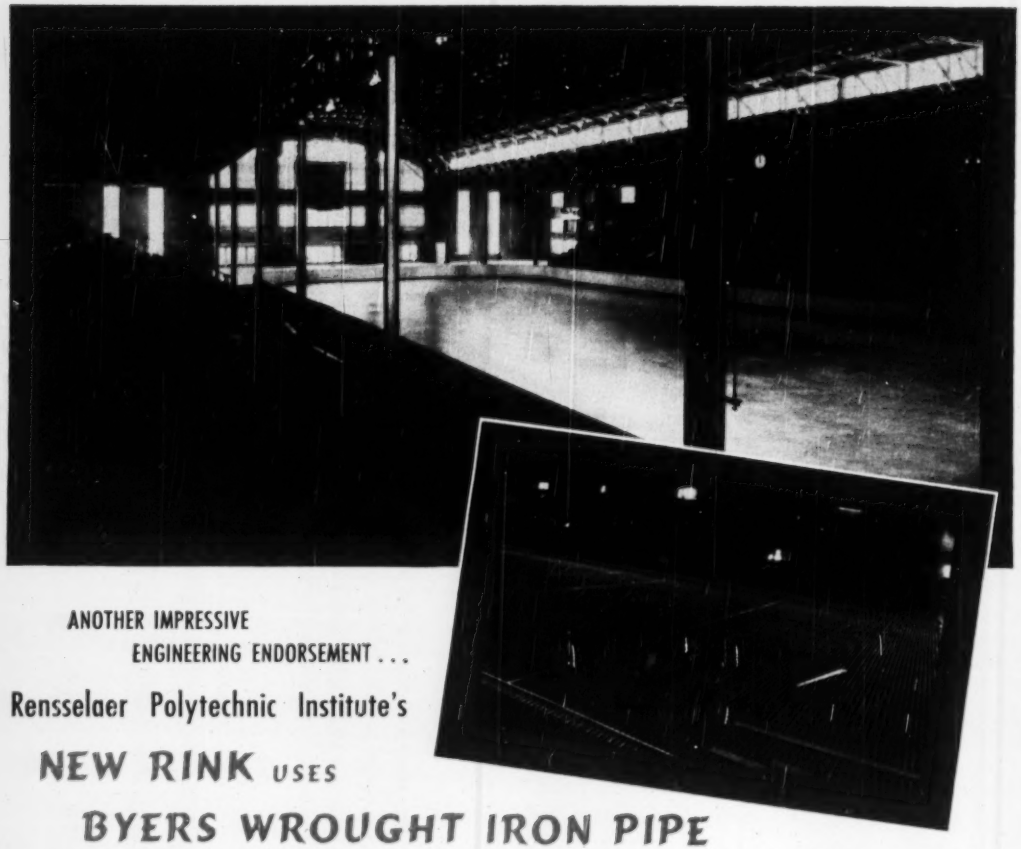
ENGINEERING NEWS-RECORD



A McGRAW-HILL PUBLICATION



ANOTHER IMPRESSIVE
ENGINEERING ENDORSEMENT . . .

Rensselaer Polytechnic Institute's NEW RINK USES BYERS WROUGHT IRON PIPE

When Rensselaer Polytechnic Institute—one of the oldest and best-known engineering colleges in the country—built a modern rink in its Field House last year, Byers Wrought Iron pipe was given another significant vote of confidence. J. H. Brelsford, engineer in charge of new construction; L. B. Combs, Head, Department of Civil Engineering; and Keis & Holroyd, Engineers, united in choosing wrought iron for rink piping. Durability was naturally of first importance in the minds of the specifiers, as the rink was installed to revive ice hockey as a major sport, and also to permit the staging of exhibition professional games.

An interesting "by-product" use of the installation was improvised during the commencement ceremonies. The refrigeration equipment was turned on, producing a pleasant, comfortable coolness throughout the Field House, despite the sweltering weather outside. This innovation was much appreciated by the audience.

More than eight miles of $1\frac{1}{4}$-in. Byers Wrought Iron pipe, fabricated into hairpin shaped units on $4\frac{1}{2}$-in. centers, was laid in the 16,000 sq. ft. of rink area. All control valves for each coil were located at one side, for convenience. Ryan Company, Inc., fabricated and installed the piping.

Wrought iron has proven its superior durability, over and over again, in rinks in all areas. We will be glad to send you a report of a survey of 23 rinks that give specific examples.

> Wrought iron's longer life springs from its unique nature. Tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron, halt and disperse corrosive attack, and also anchor the initial protective film—which shields the underlying metal.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, New York.

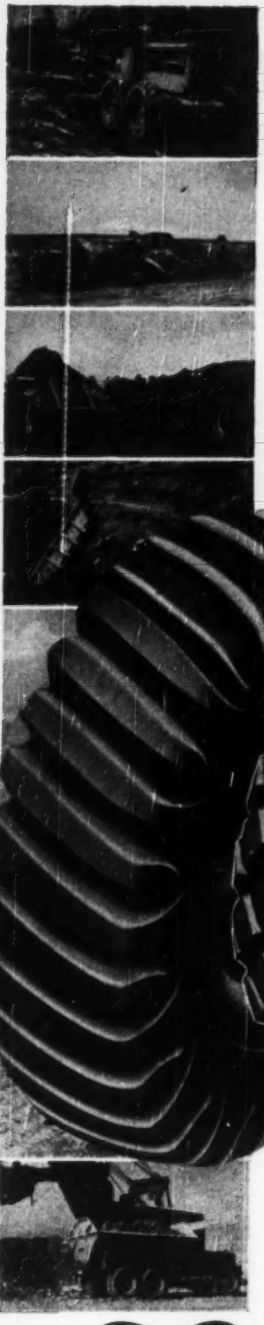
BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

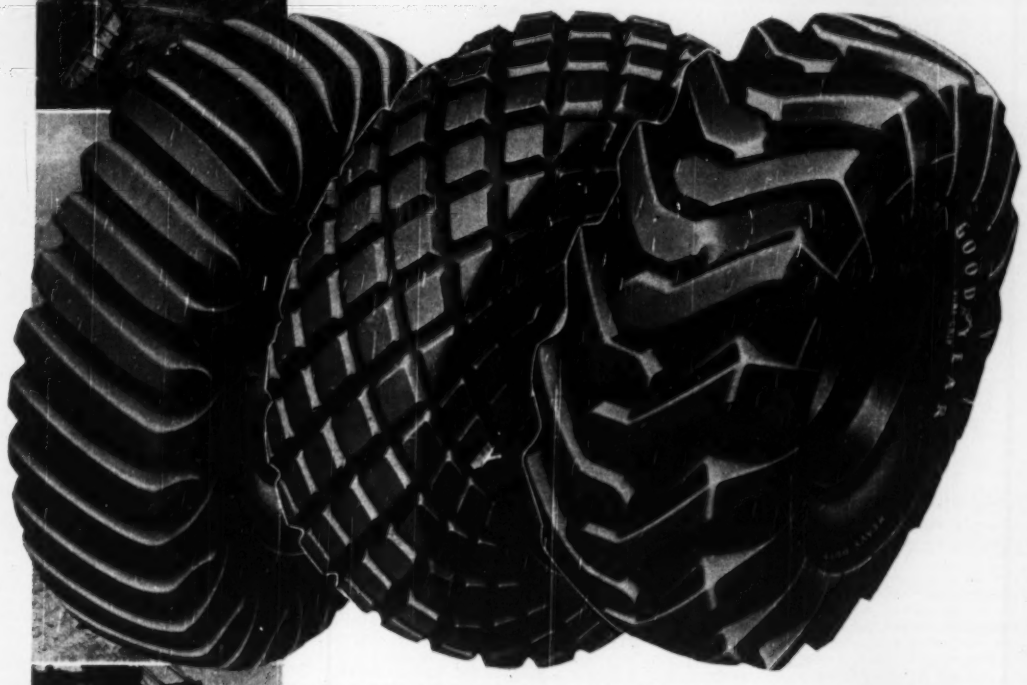


No job's too tough

for these tires!

YOU'LL find these super-stamina Goodyear tires ready, willing and able to tackle the toughest construction jobs. For each is specially designed, specially built in tread and body to meet the needs of a particular type of work. Each excels in performance, mileage, stamina, economy. That's why *more tons are hauled on Goodyear tires than on any other kind.*

Speed up your schedules, cut down your costs, always BUY and SPECIFY Goodyear—*it pays!*



HARD ROCK LUG
Super-tough champ for all types of rock work.

ALL-WEATHER
Finest for flotation, rolling big loads faster.

SURE-GRIP
Tops for drive-wheel traction on graders and pans.

GOODYEAR

We think you'll like "THE GREATEST STORY EVER TOLD"—every Sunday—ABC Network.

All-Weather, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

PROVED OVER 80 YEARS

Accuracy In Action
Economy In Use

Completely Dependable for a Lifetime

BERGER

- TRANSITS
- LEVELS
- THEODOLITIES
- COLLIMATORS
- ALIDADES

Instruments of Precision for Surveying, Mining, Engineering, Topographical and Astronomical Use

You work fast and accurately with a Berger instrument — get more work done in a day. Errors are eliminated, costly manpower saved. Go for years if not for a lifetime without "laid up" instruments and repair bills. Get unparalleled economy, not only in the long run, but in everyday use.

Leadership **BERGER** *Since 1871*

THIS COUPON BRINGS DATA

C. L. BERGER & SONS, INC. 102650
37 WILLIAMS ST.
ROXBURY, BOSTON 19, MASS.

Send Literature on TRANSITS ☐ LEVELS ☐
THEODOLITES ☐ COLLIMATORS ☐ ALIDADES ☐

Name .....
Title .....
Company .....
Address .....
City ..... Zone ..... State

ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 145 OCTOBER 26, 1950 No. 17

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Six contractors tackle first bridge over Chesapeake 32
Work starts on west section of expressway ..... J. R. Dietz 35
Moving roads and rails for McNary Dam 39
Enter the consulting contractor 42
Motorized valves sample sewage in proportion to flow ... G. S. Long 46
Perspective—Port developments: 1950 ..... W. F. Heavey 120

DEPARTMENTS

Construction Week 17
Construction Trends 19
Editorials 21
News of the Week 23
Reader Comment 48
Field and Office 51
Developments Abroad 52
Municipal Affairs 55
Men and Jobs 59
Education and Research 62
Obituaries 66
Elections and Activities 69
Unit Prices 70
Construction Reports 75
New Products 108

Number of copies of this issue printed 45,329

Managing Editor—Eugene E. Halmos, Jr.

Associate Editors—*New York*, V. T. Boughton (senior associate), J. C. Bumstead, R. H. Dodds, F. S. Merritt; *Chicago*, J. R. Carr; *San Francisco*, N. A. Bowers, L. L. Wise; *Washington*, V. B. Smith.

Assistant Editors—*New York*, Melvin Dean, Arthur J. Fox, Jr., T. D. MacGregor, David E. Reilly.

Staff Assistants—Mary Kiernan, *Research*; Ethel Lyon, *Makeup*; E. El Thorp, *Production*; Louise Barker, Ruth McCarthy, Madalene Smith, *Editorial*.

Business News—Elsie Eaves, *Manager*; E. M. Huber, Jane Lucia, J. A. Mahoney, M. W. Roessler, M. Wetzel.

Contributing Editor—Edward J. Cleary.

Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.

Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City, *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER
Publisher

October 26, 1950 ENGINEERING NEWS-RECORD Vol. 145—No. 17

Publication Office—99-129 N. Broadway, Albany 1, N. Y.
Executive and Editorial Offices—330 West 42nd St., New York 18, N. Y.

Copyright 1950 by McGraw-Hill Publishing Co., Inc. All rights reserved. Published every Thursday by the McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), founder; CURTIS W. McGRAW, President; WILLARD CHEVALIER, Executive Vice-President; JOSEPH A. GERARDI, Vice-President and Treasurer; JOHN J. COOKE, Secretary; PAUL MONTGOMERY, Senior Vice-President, Publication Division; RALPH B. SMITH, Editorial Director; NELSON BOND, Vice-President and Director of Advertising; J. E. BLACKBURN, JR., Vice-President and Director of Circulation. Cable address, "McGraw Hill New York."

Subscriptions: (1 yr., 2 yr., 3 yr.) U. S. and possessions $6, $9, $12; Pan America, $10, $16, $20; Canada, $8, $12, $16; All others, $20, $30, $40.

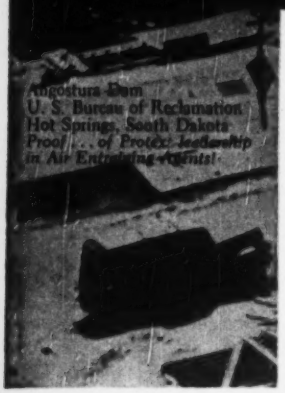
Address all communications about subscriptions to Director of Circulation. Price 35¢ per copy.

Please indicate position and company connection on all subscription orders.

Entered as Second Class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of March 3, 1879. Printed in U. S. A.

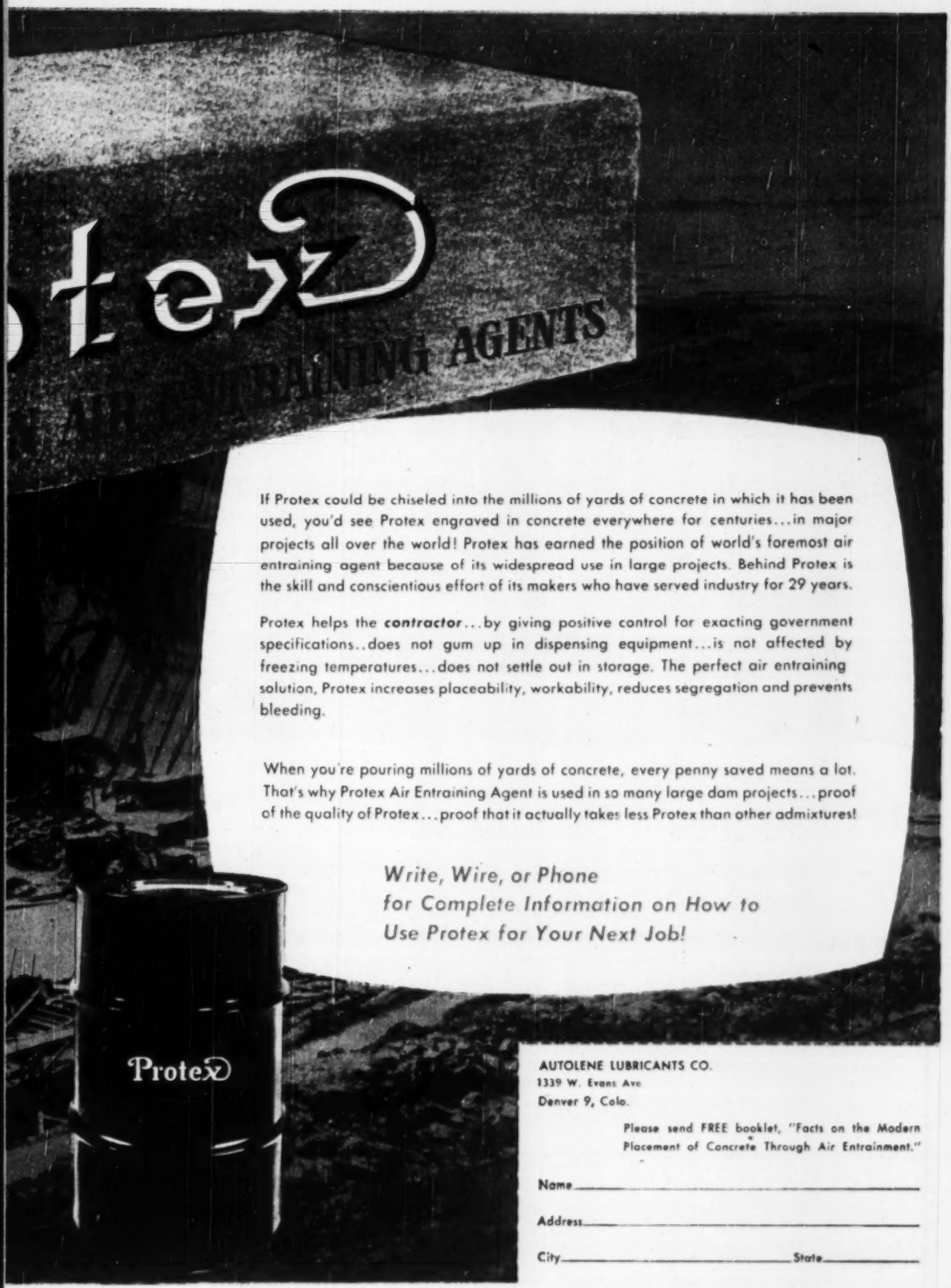
IF YOU HAVE A REAL ROCK SHOVEL you are equipped for output in any pit!
The Northwest Dual Independent Crowd utilizes force that every other independent crowd wastes!
The Cushion Clutch eliminates the effects of shock overloads to parts under power and helps make ample power safer. The Northwest Welded Boom and Dipper Sticks have been proved in Rock work and are built for the hardest job a shovel has to do.
Cast Steel Machinery Bases and Cast Steel Machinery Side-Frames take the shocks of rock digging and maintain shaft alignment.
If's a real Rock Shovel and if you have a Real Rock Shovel you never have to worry about output at the heart of the job.
NORTHWEST ENGINEERING COMPANY
1502 First National Bank Building
135 South LaSalle St.
Chicago 3, Ill.
only the best for the heart of the job
MAKE YOUR KEY MACHINE A REAL ROCK SHOVEL
PROFIT
NORTHWEST
CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

PROTEX IS SPECIFIED BY MORE LARGE PROJECTS!



Protex Air Entraining Agent is widely used by U. S. Bureau of Reclamation, U. S. Corps of Engineers, Bureau of Public Roads. Meets the requirements of Federal Specifications SS-C-192, ASTM Spec. C-175-48T.

AUTOLENE LUBRICANTS CO.



If Protex could be chiseled into the millions of yards of concrete in which it has been used, you'd see Protex engraved in concrete everywhere for centuries...in major projects all over the world! Protex has earned the position of world's foremost air entraining agent because of its widespread use in large projects. Behind Protex is the skill and conscientious effort of its makers who have served industry for 29 years.

Protex helps the ***contractor***...by giving positive control for exacting government specifications..does not gum up in dispensing equipment...is not affected by freezing temperatures...does not settle out in storage. The perfect air entraining solution, Protex increases placeability, workability, reduces segregation and prevents bleeding.

When you're pouring millions of yards of concrete, every penny saved means a lot. That's why Protex Air Entraining Agent is used in so many large dam projects...proof of the quality of Protex...proof that it actually takes less Protex than other admixtures!

Write, Wire, or Phone
for Complete Information on How to
Use Protex for Your Next Job!

AUTOLENE LUBRICANTS CO.
1339 W. Evans Ave
Denver 9, Colo.

Please send FREE booklet, "Facts on the Modern Placement of Concrete Through Air Entrainment."

Name_____

Address_____

City_____ State_____

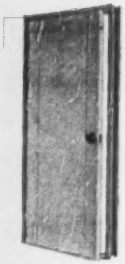
TRUSCON

MARK OF MERIT PRODUCTS

TRUSCON *Residential Interior* STEEL DOORS

Swing and Slide Type

sex appeal...



SWING DOORS AND FRAMES — Series 50

Designed to compete in cost with doors of any other material or design, Truscon's new line of 6'-8" high interior flush type steel doors, in five (5) width dimensions from 1'-8" to 3'-0", are available from warehouse stocks, complete with choice of either 4¼" or 6¼" depth frames and four types of locksets.

SLIDING CLOSET DOORS — Series 50A

Outstanding economy of construction cost with maximum convenience of operation commend this space-saving door design to the architect, builder and home-owner. Sliding closet doors are stocked in two widths of 4'-0" and 5'-0". The complete door package is delivered in a protective carton.

that appeals to both sexes

Trim, clean-cut lines and modern beauty... operating convenience and efficiency of space... these outstanding features are acclaimed by men and women in every installation of Truscon Residential Interior Doors and Frames. They're the newest note in smart home design. Long life... smooth, trouble-free operation... no warping, shrinking or sagging... these advantages are assured by Truscon precision engineering and manufacturing. Economy of installation is an additional important feature. Write for Truscon Residential Interior Door catalog giving complete range of sizes and full details.

FREE Book on Complete Line of Truscon Residential Steel Doors. The Truscon Steel Company Manufactures a Complete Line of Steel Windows and Mechanical Operators... Steel Joists... Metal Lath... Steel-deck Roofs... Reinforcing Steel... Industrial and Hangar Steel Doors... Bank Vault Reinforcing... Radio Towers... Bridge Floors.

TRUSCON STEEL COMPANY

Subsidiary of Republic Steel Corporation

YOUNGSTOWN 1, OHIO

Warehouses and sales offices in principal cities

SEVEN FACTORIES SERVING AMERICA *from*

the Great Lakes to the Gulf, and from Mid-Continent to the East Coast with

UNIVERSAL VITRIFIED PIPE • U.S. CONCRETE PIPE

PRODUCTS

Sewer Pipe (Vitrified)	Segment Sewer Block	Flue Lining
Sewer Pipe (Concrete)	Meter Boxes	Stove Pipe
Liner Plates	Fire Brick	Chimney Tops
Aerodrane Filter Block	Septic Tanks	Chimney Pots
Tylox Rubber Couplings	Drain Tile	Ship Lap Wall
Slipseal Sewer Joint	Fire Clay	Coping

SALES OFFICES:

NEW YORK—3917 LINCOLN BUILDING—60 E. 42nd Street. Tel. MU-7-7395
BALTIMORE, MD.—HALETHORPE BRANCH—P. O. Box 7769. Tel. Elkridge 790
CINCINNATI, OHIO—P. O. NEWTOWN, OHIO—Box 215. Tel. Locust 7846

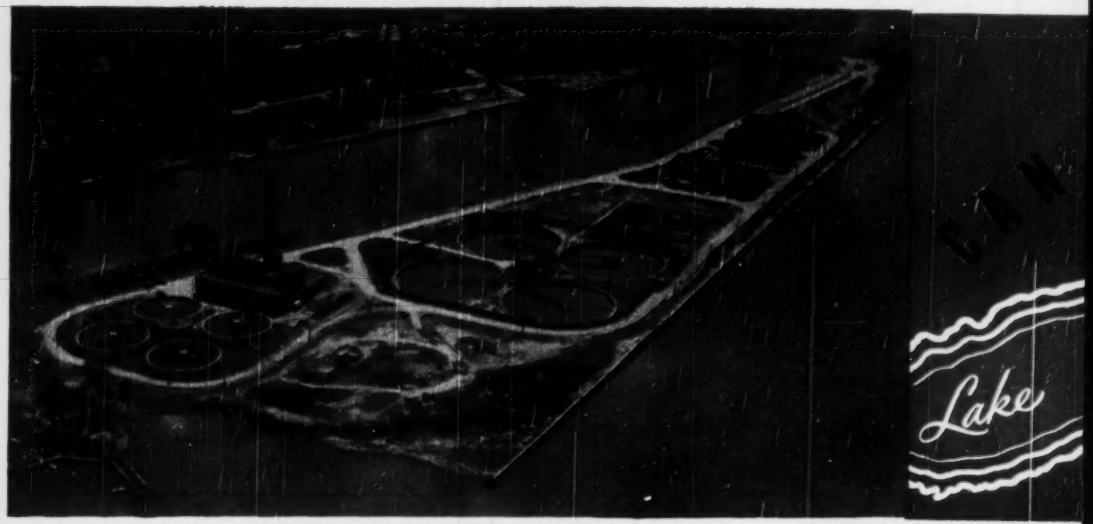
FACTORIES:

BALTIMORE, MD., CINCINNATI, OHIO, NEW PHILADELPHIA, OHIO, PALMYRA, OHIO (2), UHRICHSVILLE, OHIO (2)

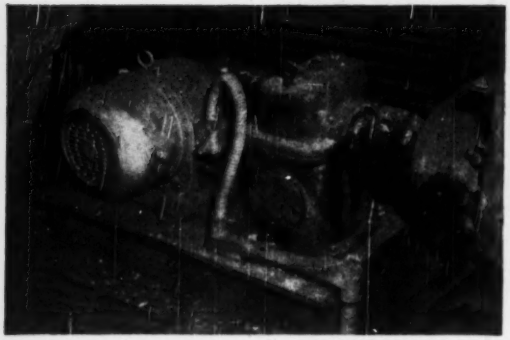
UNIVERSAL SEWER PIPE CORPORATION
UNITED STATES CONCRETE PIPE COMPANY

GENERAL OFFICES • 1500 Union Commerce Building • CLEVELAND 14, OHIO

CLEAN WATERS *at*



Airview of the Bird Island Sewage Treatment Works at Buffalo, N. Y. Treatment includes pumping, screening, aeration, chlorination, sedimentation, sludge digestion and incineration.



A G-E 7½-hp induction motor drives a sludge mixer. With their extra protection against physical damage, electrical breakdown and operating wear and tear, G-E motors assure long life and high service continuity.

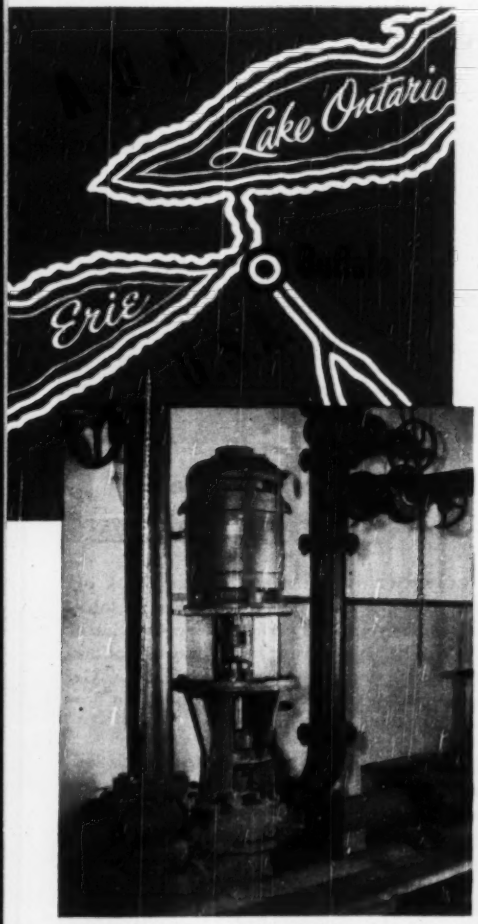
Three G-E 7½-hp splashproof induction motors drive filtrate pumps for vacuum filters. These motors have already given 12 years of service although constantly subjected to moisture from dripping and splashing.

GENERAL ELECTRIC

666-58

Buffalo HELP KEEP A TREATY

G-E Equipped Treatment Plant Guards International Waters



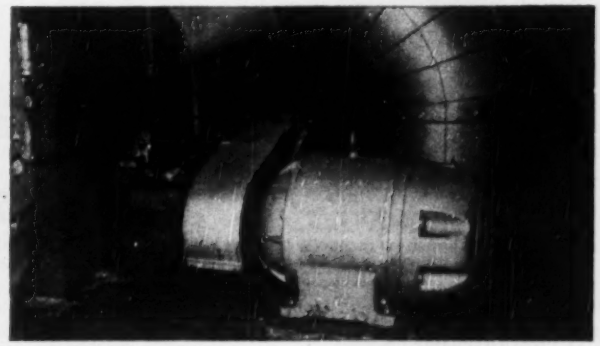
Since its dedication in 1938, Buffalo's sewage treatment plant has helped make good a U.S.–Canadian Treaty signed over 40 years ago to protect international waters from pollution. Located on Bird Island in the Niagara River, the plant has helped keep waters clean from Buffalo to Lake Ontario.

Plant officials attribute much of the success of the Buffalo plant's operation to the outstanding service given by some 100 General Electric motors. In many cases operating under the most severe conditions, the motors have given continuous and reliable performance.

General Electric can help your community get that new or improved sewage treatment plant by (1) assisting you and your consultant in formulating electrical plans, and (2) building public support through the use of G.E.'s full-color sound movie, *Clean Waters*.

Contact your General Electric representative early in the planning stage. *Apparatus Dept., General Electric Company, Schenectady, N. Y.*

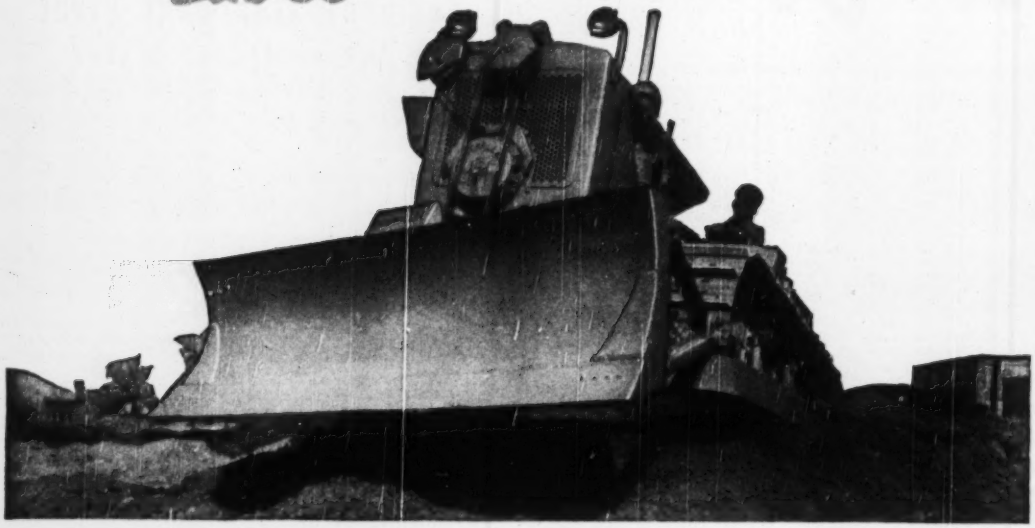
Sludge circulating pumps for the digester tank are driven by G-E 10-hp vertical drip-proof motors. G-E vertical motors now have improved bearing lubrication and double-end ventilation for longer life and more efficient operation.

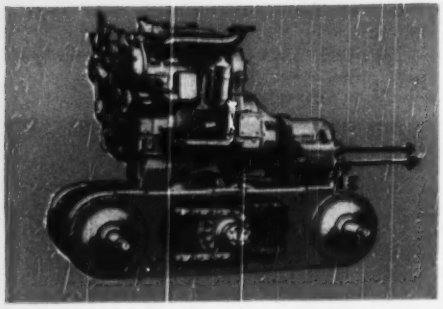


This is one of the G-E 50-hp, totally enclosed, fan-cooled induction motors used to drive exhaust fans for the sludge incinerator. The corrosive atmospheres in buildings like this call for motors that can take it.

GE CO-ORDINATED SEWAGE-PLANT ELECTRIFICATION

Rough, Rugged, Heavy Duty Lubes for every equipment need!





Look over this complete line of all-weather... all-purpose lubricants!

NAME ANY LUBRICATION PROBLEM you can think of! There's the right grade and type of Cities Service lubricant to do a real job for you. This performance-tested line of quality products will help speed your heavy duty operations, cut maintenance costs, prevent equipment breakdowns. Get in touch with the nearest Cities Service office to learn how these high grade lubricants can help you.

- **Trojan All-Weather... All-Purpose Greases**
- **Pacemaker Oils**
- **Trojan Gear Oils**
- **Heavy Duty Motor Oils**

FREE – A helpful new booklet—Earth Moving and Construction Machinery lubrication. Above cutaway view is typical of illustrations found in this new 50-page book dealing with proper lubrication in the construction industry. Write today for your copy.

CITIES SERVICE OIL COMPANY
Sixty Wall Tower, Room 726
New York 5, N. Y.

Please send me without obligation your new booklet entitled "Earth Moving and Construction Machinery Lubrication."

Name _____

Company _____

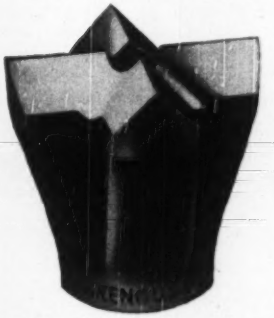
Address _____

City _____ *State* _____

ONLY TIMKEN® OFFERS:

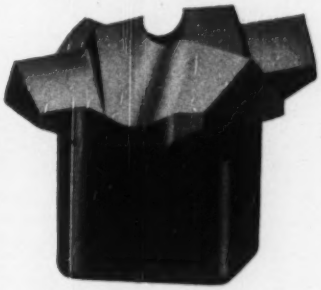
1. All 3 rock bit types...

Multi-use, carbide insert, or one-use . . . Timken® makes them *all!* So whichever type of removable rock bit is best for your job, you can get it from Timken.



MULTI-USE Gives lowest cost per foot of hole when full increments of drill steel can be drilled and when control and reconditioning of bits are correct.

CARBIDE INSERT For drilling extremely hard and abrasive ground, small holes, extra deep holes. Holes go down faster, bit reconditioning is simplified.



ONE-USE "SPIRALOCK" To use where reconditioning is not feasible. Gives lowest unit cost. "Spiralock" union holds bit on dependably, permits easy removal.

2. A complete Rock Bit Engineering Service!

Timken offers a Rock Bit Engineering Service to help you select the correct bit for your requirements. Backed by more than 17 years' experience, and with *all three* rock bit types to draw upon, the Rock Bit Engineering Service can help you get the bit performance your job demands—whether it is lowest cost per foot of hole, lowest unit bit cost, greatest possible drilling speed, or other desired advantages.

It's the only service of its kind because only Timken makes *all three* rock bit types and has had so many years of experience in mining, quarrying, and construction drilling problems. The Timken Roller Bearing Company, Rock Bit Division. Canton 6, Ohio. Cable address: "TIMROSCO".

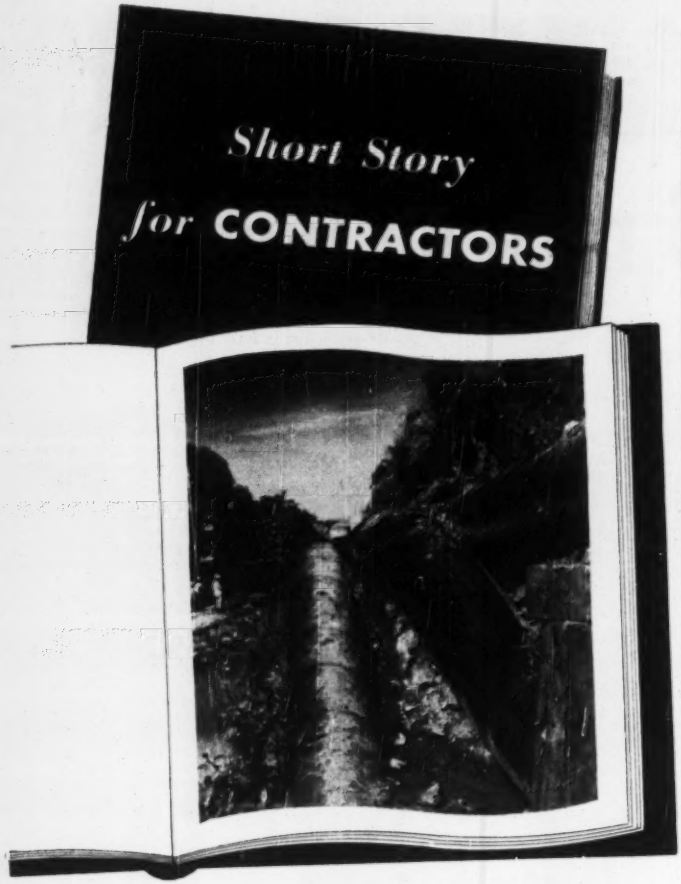
TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

your best bet for the best bit

. . . for every job

FREE BOOKLET! Everyone who buys rock bits should have a copy. Gives full information on all three types of Timken rock bits and the Rock Bit Engineering Service. Shows full line of bits with detailed descriptions. Write for your free copy.



NAYLOR PIPE

is ideal for construction jobs because it's LIGHT in Weight... yet HEAVY on Performance

Sizes from 4 to 30 inches in diameter and thicknesses from 14 to 7 gauge. All types of connections, fittings and fabrications. Write for complete details.

NAYLOR PIPE COMPANY
1248 East 92nd Street, Chicago 19, Illinois
New York Office: 350 Madison Avenue, New York 17, N. Y.

NEWS BRIEFS

Waste disposal for mines—Eleven mines in the Iron Range of Minnesota have installed waste disposal plants this year, the state water pollution control commission has announced.

Packaged houses from Sweden—Assembled in Sweden from blueprints prepared in California, five packaged housing units of fir lumber have arrived in San Francisco. Their importer, William J. DeFremery, has 195 more on tentative order. Two-bedroom packages sell for $5,500, duty paid, and three-bedroom units for $6,000. It will cost about $5,000 to erect the larger unit. The packages contain specially cut wood for the framework, window sashes and hardwood floors, veneered doors and cabinets, fully equipped bathroom and kitchen.

War clause in contract—Attorney General M. Williamson of Oklahoma has approved a new clause for inclusion in highway construction contracts, as follows: "If in the event of a national emergency construction is stopped by any national or state agency, directly or indirectly, the contractor will be paid in full for all work completed at contract unit prices; and if the state highway commission shall determine at that time, or at any time thereafter, that circumstances and conditions are such that it will be impractical to proceed with the work under contract the contract will be terminated and the contractor paid for any material on hand and other costs that are directly chargeable to the work under contract."

Safe detours—With more than 260 structures, including crossings, of the New Jersey Turnpike, every effort is being made to provide for the safety of motorists by the construction of hard surfaced detours. The turnpike, an 118-mile express highway extending from Deepwater, in Salem County, to a point near the George Washington Bridge, is scheduled to open in November of next year.

Frustrated beavers—Last spring beavers in Northumberland County, Va., began building a dam at a bridged swamp under Route 200. Road department workers destroyed it. The beavers rebuilt. This alternate construction and demolition went on all summer and in the fall the beavers re-

(Continued on page 14)

You can steer it with a finger!

Close-up of air steering controls. Note convenient location.

Here's a good "steer" in tractors...the Oliver Model D Crawler and its new *air steering.** This new finger-tip steering makes life easy for the operator . . . cuts down fatigue and lets him get more done per day.

Two conveniently located steering levers can be operated at the touch of a finger . . . assure instant, positive steering control. A compressor mounted to the front of the engine block and driven by the fan belt does all the hard work.

In addition to new air steering, the Model D brings you other outstanding advantages that add up to more money in your pocket. 61.2 H.P. in the gasoline model and 61.19 H.P. in the Diesel Model; 4 forward and 2 reverse speeds; exclusive Oliver steering principle that keeps power on both tracks at all times; rugged, sound construction; easy operation and maintenance are among the many Oliver features that make the Model D the top choice among men who want value for their tractor dollar.

For complete details, see your Oliver Industrial Distributor or write The OLIVER Corporation, Industrial Division, Cleveland, Ohio.

*Available as optional equipment.

THE OLIVER CORPORATION

A complete line of industrial wheel and crawler tractors

"FINEST IN INDUSTRIAL MACHINERY"

with

RUST-OLEUM

Rust can be stopped . . . stopped easily, surely, economically! RUST-OLEUM is the answer. For 25 years it has proved its capacity to stop and prevent rust at sea, in fume-choked industrial areas, on railroad rolling stock, bridges and signaling equipment.

RUST-OLEUM . . . an exclusive formula . . . protects metal with a tough, long-lasting pliable film that dries to a hard, firm finish that defies rain, snow, salt air, fumes and weathering. It adds years of extra use to metal roofs, tanks, sash, fences, stacks, gutters, downspouts, machinery and other metal surfaces.

RUST-OLEUM decorates as well as protects. It is available in all colors, aluminum and white. It can be applied to metal where rust has already started. You don't have to remove all the rust.

RUST-OLEUM is stocked and sold by Industrial Distributors in most principal cities. See our complete catalog in Sweets, or write for full information.

RUST-OLEUM CORPORATION

2531 Oakton Street • Evanston, Illinois

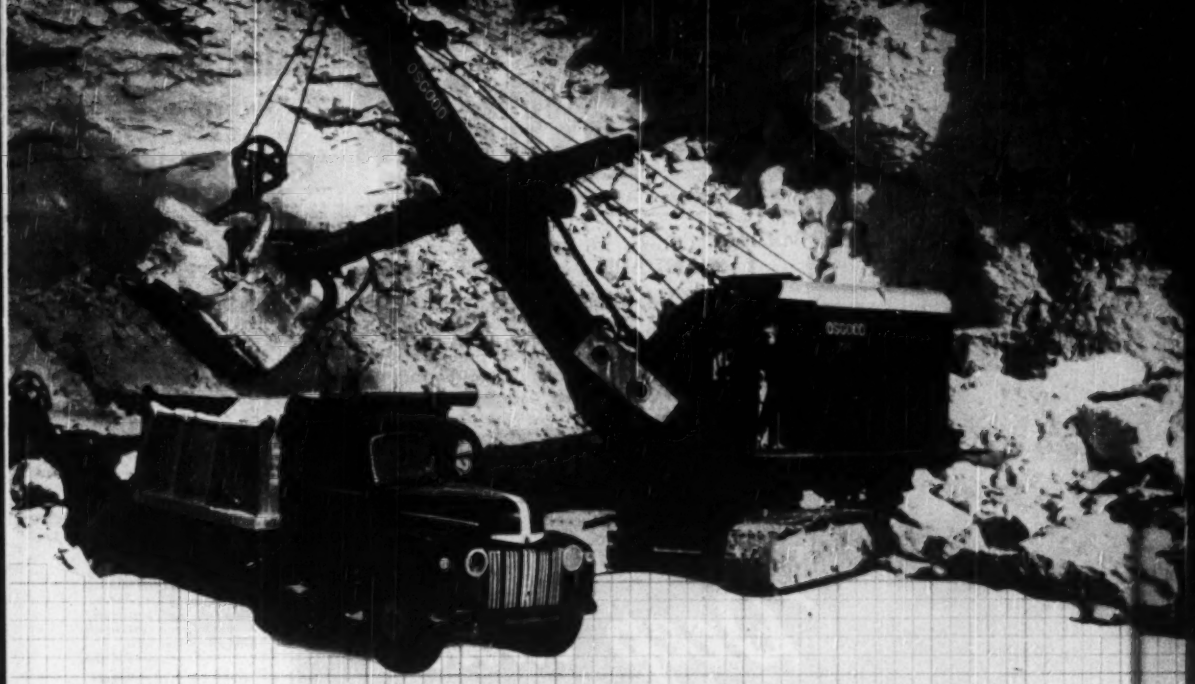
doubled their efforts. Finally, highway employes in desperation, realizing at last that beavers are nocturnal in their habits, began hanging a lighted lantern each night in the under-the-highway swamp. The 24-hour day proved too much for the beavers and they quit.

Sabotage protection—The California State Assembly at a recent special session of the legislature adopted a resolution urging state and federal authorities to take steps to protect from sabotage dams and other public works in the state. The assembly unanimously favored a proposal by Assemblyman Charles Weber of Stockton that armed guards and armaments be placed at dam locations. The resolution contends there is a great danger of sabotage by release of impounded waters, which would cause floods and destruction in vast areas of the state.

Lost, strayed or stolen?—Shortage of thousands of dollars worth of automotive parts at the Indiana State Highway Commission's 36 sub-district garages has been disclosed after the start of an audit of supplies. Neither the commission nor the state board of accounts is yet prepared to say whether or not the shortage is a paper one due to poor bookkeeping or a case of thievery by employes. It may take six months for the audit.

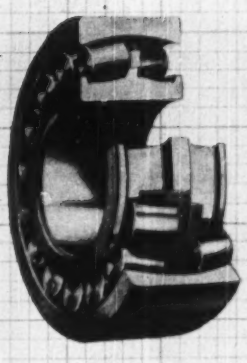
5½ into 5 won't go—The question of whether or not the Underwood Road bridge spanning Pymatuning Creek in Ashtabula County, Ohio, can safely support a bus load of school children has started a controversy involving parents, local school board officials, the county engineer and the Board of County Commissioners. The bridge is limited to a 5-ton load according to signs at both approaches. The loaded school bus weighs approximately 5½ tons. So the school board has ordered the bus driver to stop, the children to walk across the bridge, and the bus to be driven across and the children reloaded.

Expensive jag—A Chicago truck driver whose truck caused big damage to a bridge on U.S. 31, six miles south of Seymour, Ind., recently, pleaded guilty to a drunken driving charge and was fined $62.25 by Jackson Circuit Judge George H. Gossman. His driver's license was suspended for 90 days. The truck, loaded with 17,000 lb of cosmetics, crashed into the bridge and burned. The damage was so bad that the Indiana Highway Department ordered the bridge closed, and traffic rerouted. Officials estimated it would cost $30,000 and require from 60 to 90 days to build a new superstructure.



loading pay dirt...

with TORRINGTON SPHERICAL ROLLER BEARINGS



To move the earth and make it pay, Osgood power shovels must stay on the job day after day, with minimum time off for maintenance.

One way Osgood engineers make sure of efficient shovel performance and reliability under hard knocks is by using Torrington Spherical Roller Bearings on drum shafts and reversing shafts. In these tough applications, self-aligning bearings roll smoothly, assure uniform load distribution, even when momentary overloads cause shaft deflection.

You can give your equipment an extra margin of work capacity, and greater service life expectancy by specifying Torrington Spherical Roller Bearings. Our engineers will be glad to help you with details of design and application.

THE TORRINGTON COMPANY
South Bend 21, Ind. • Torrington, Conn.
District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON *SPHERICAL ROLLER* **BEARINGS**

SPHERICAL ROLLER • TAPERED ROLLER • STRAIGHT ROLLER • NEEDLE • BALL • NEEDLE ROLLERS

Raymond

MAKES 5 TYPES OF CONCRETE PILES

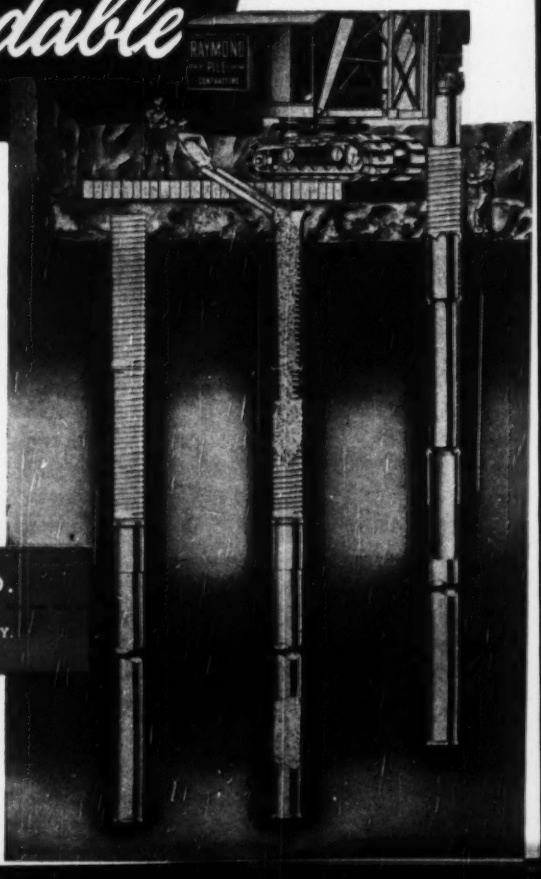
1. STANDARD . . . 2. STEP-TAPER . . . 3. PIPE STEP-TAPER
4. COMPOSITE . . . 5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements, also cement mortar lining of pipes by the Centriline Corporation, a Raymond Subsidiary.

3. PIPE STEP-TAPER PILES

Deep and Dependable

At the right, the pipe step-taper pile is being driven with the rigid steel mandrel. In the center the shell and pipe are being filled with concrete after having been driven to satisfactory resistance and inspected. At the left is a completed pipe step-taper pile.



Raymond Pipe Step-Taper Piles are composed of an upper section of Step-Taper Shell Pile and a lower section of closed-end steel pipe pile. These piles are generally used to penetrate thick beds of soft soil to reach hard bottom at depths as great as 150 feet or more. The pipe step-taper pile is a most dependable pile available for reaching hard ground at great depths.

Raymond's methods result in efficiencies and substantial savings that are well worth investigating. Consult our engineers for more detailed information.

RAYMOND PILES MAINTAIN DRIVING RESISTANCE

Raymond CONCRETE PILE CO.

140 CEDAR STREET, NEW YORK 6, N. Y.

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Salt Lake City, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.

THE CONSTRUCTION WEEK

MORE CONTROLS COMING—The controls for industry are coming fast—and they'll be harsh, say insiders. The reason is simple: Defense production is already running into materials shortages. And two of them, (see p. 23 for the first), will hit hard at construction—a ban on the building of such nonessentials as night clubs and race tracks; an allocation of 300,000 tons of steel a month for freight cars.

HERE'S WHY—Some of the reasons behind the demand for controls include these: (1) The armed forces now figure that purchases of construction materials and equipment for the U. S. and its Atlantic Pact allies will take nearly $500 million; (2) there were some local floods of applications for housing loans (particularly in Washington) for future construction—it wasn't general, but enough to shock housing officials; (3) there are certain types of projects where continued construction will need to be assured. Some power projects fall in this category as will some highway jobs. Last week, sanitary engineers, in Washington for the Federation of Sewage Works Associations meeting took the opportunity to brief National Security Resources Board's chief Stuart Symington on the essentiality of water supplies and waste disposal in mobilization planning. All these pressures are in the controls picture.

PRESSURE FROM LABOR—Another big pressure on Symington comes from labor. AFL and CIO leaders complained bitterly that strict credit curbs on housing made it impossible for a wage earner to buy a home. Why let other things run unchecked, they asked, when workers can't hope to own homes?

PRESSURE FROM VETS—There are pressures from the opposite direction too, and one of them succeeded in making a break in the tight housing credit curb. Veterans groups got concessions for veteran hardship cases. The Housing and Home Financing Agency OK'd an amendment to allow VA to approve a mortgage maturity up to 30 years (as before) where monthly payments on a 20-year term would prevent a veteran from getting a house. And veteran groups are still pressing VA to obtain other special preferences for ex-soldiers.

STEEL DAYBOOK—Very shortly, steel-users may expect almost day-to-day information on the amounts of steel and other critical materials that are going into the military hopper. Reasons: The National Production Authority has set up a procedure for spreading certified defense orders equitably among steel producers. The formula lets any producer reject a priority order if he already has such orders over certain specified percentages of his average monthly shipments during the first eight months of 1950. Thus the records of "DO" orders received and shipments made will give industry officials and the government their first direct information on the exact impact of military orders.

MORE PENN TURNPIKES?—Pennsylvania's Turnpike Commission may undertake two more toll road extensions shortly, Chairman Thomas Evans said. Work on the extensions—one to Scranton and another to Erie—has already come under consideration, and surveys may start shortly.

MANPOWER SHORTAGE?—As of the end of September, 98 employees of the Los Angeles Department of Water and Power have entered military service.

HYDRO EXPENDITURES UP—Heavy expenditures for construction of federal hydro-power developments mark the program of the Army's Corps of Engineers for the year ending June 30, 1951 (despite the cuts noted in ENR Oct. 19, p. 25). Eight of the largest allocations go to projects that will have power plants: McNary Lock and Dam, $39,389,000; Fort Randall, $31,455,000; Garrison, $29,969,000; Buggs Island, $22,950,000; Wolf Creek, $22,000,000; Chief Joseph, $18,529,000; Clark Hill, $17,000,000 and Bull Shoals, $16,272,000.

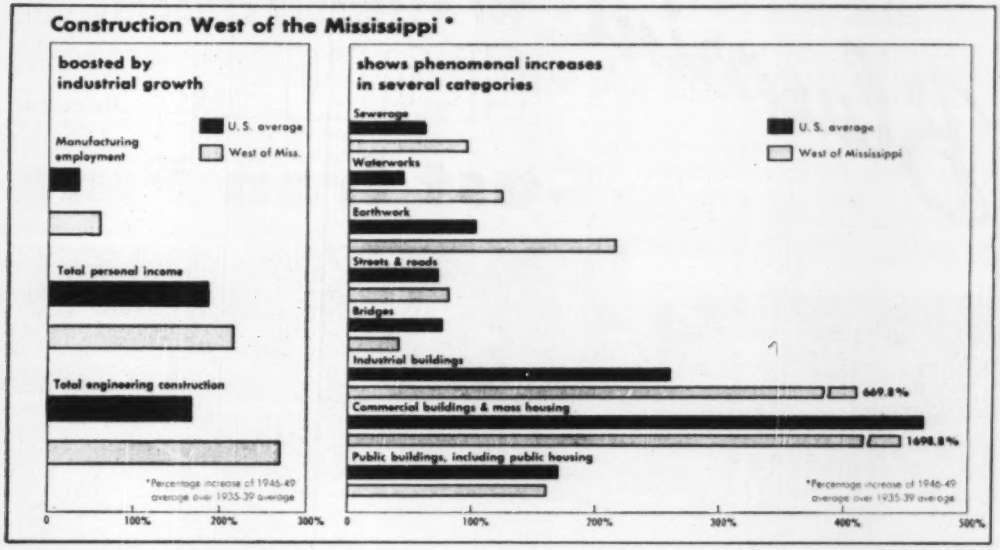
WIND BRINGS CODES—Phoenix, Ariz., engineers made capital of a wind and hailstorm that recently brought more than $2,000,000 in damages to the city. They immediately called for better local building codes. Said the local chapter of the American Association of Engineers: A large part of the damage resulted from faulty construction that in turn stemmed from poor designs by unlicensed people; lack of supervision; lack of good building codes. The group offered its services to help city and county officials draw up better codes.

ROCKS DOCKS—With the Chain-of-Rocks canal now nearing completion (ENR Oct. 5, p. 30) the Bi-State Development Agency (Missouri and Illinois) is making plans for construction and operation of major harbor and wharf facilities at Granite City, Ill. Leif J. Sverdrup, chairman of the agency, said he had been negotiating with Army engineers for a tract of land near the southern end of the 8.3-mi. $38,000,000 canal.

SHORTAGE NOTE—Blaming shortages of materials—and expecting limitation orders that might hamper commercial construction—the Store Modernization Institute of New York City last week cancelled plans for a modernization show in Chicago next March.

This is an
INLAND
HI-BOND
Reinforcing Bar
It not only meets but exceeds the minimum standards set up by ASTM A305-49.
Its proper ratio of bearing to shearing area provides greater bond between the steel and concrete thus providing more efficient transfer of stress at splices and reducing the size of tension cracks. This means a more efficient and better looking structure.
It saves your client's money. In many instances, end hooks can be completely eliminated which means a saving in steel, fabricating and placing costs. Because a single wire loop holds HI-BOND firmly in place—even during pouring of concrete—there are savings in wire and tying time.
It is available for prompt shipment from the Ryerson Company and other leading steel warehouses throughout the middle and far west.
It costs *no more* than ordinary reinforcing bars!
Specify Inland HI-BOND—the reinforcing bar with the built-in anchorage.
INLAND
STEEL COMPANY
38 South Dearborn Street • Chicago 3, Ill.

CONSTRUCTION TRENDS



This report—third in a series of seven analyses of regional construction trends—is based on a special economic study made by ENGINEERING NEWS-RECORD.

CONSTRUCTION BOOMS WEST OF THE MISSISSIPPI

Construction in the Central West, booming since the war, will get a new lift from mobilization. Prospect is for heavy building activity for years to come.

The postwar U.S. construction boom hit hardest in the region west of the Mississippi—roughly, the area between the big river and the Rockies, minus Louisiana.

In these fourteen states, the average annual value of new construction rose 270% over prewar levels, an increase more than 50% greater than the rise for the U.S. as a whole.

As a result, the region's share of total U.S. construction skyrocketed from an average of 17.6% in 1935-39 to 24.2% for 1946-49. Public building made up some of the jump, but most of the increase came in private construction.

Growing new industries helped cause the big rise in Central Western building; U.S. industry is steadily moving south and west. And huge postwar sales of farm products and raw materials—oil, natural gas, sulphur, metals—brought new prosperity to the region, provided more cash to finance construction.

Mobilization will give another boost to construction by speeding up the growth of industry and increasing demand for Western products. Rising incomes and normal population growth will provide a big backlog.

Postwar construction gains were spread unevenly through the Central West. Texas offers numerous advantages to industry, among them a large supply of raw materials and some excellent deep water ports. So Texas got a lion's share of new industry—and new industrial construction.

Annual postwar industrial construction in Texas was almost eleven times the prewar average. In 1946-49 Texas did 14.9% of all U.S. industrial building, compared to a 1935-39 average of only 4.5%.

Industrial development always brings a sharp rise in urban construction. Growing industry lures workers from farms into the cities, and creates demand for new commercial buildings, houses, sewers and public buildings. In the Central West, annual postwar commercial building was 17 times the 1935-39 average.

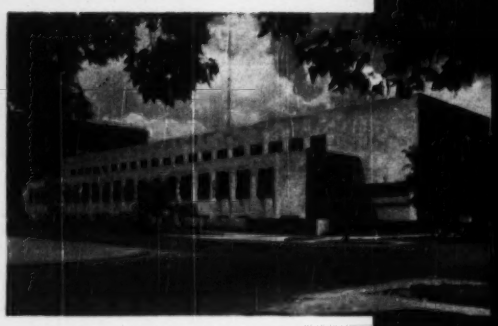
Again Texas led the parade—its commercial building shot up a spectacular 3200%.

Urban construction will probably be cut back next year by shortages of manpower and building materials. But continued growth of the area's urban population will create a big demand for future construction.

THE OUTLOOK—Short range prospects are bright for construction in the Central West. Shortages may cut commercial construction, but mobilization will keep contractors busy on high priority industrial building and heavy public building should continue.

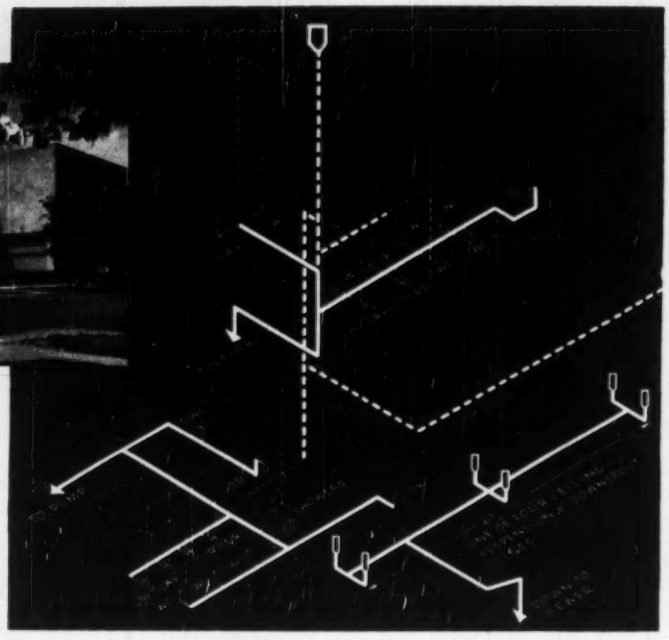
The long range outlook is excellent. Continued growth of industry will keep industrial construction high. After the mobilization emergency, normal population growth and the need for urban development will boost other types of construction.

Blueprint for Assembly Economy with CLOW "IPS"* (THREADED) Cast Iron Pipe



RESEARCH LABORATORY
of a Prominent University

- *ARCHITECTS*
  Schmidt, Garden & Erikson
- *PLUMBING CONTRACTOR*
  Charles Thumm Co

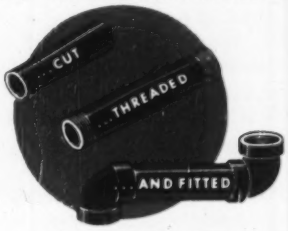


Shown above is a section from the plumbing blueprint of a university's research laboratory, with Clow "IPS"* (threaded) Cast Iron Pipe indicated most prominently. A large quantity of this Clow Pipe was used in the building as downspouts, and as waste and vent piping. Clow "IPS"* threaded joint pipe allowed time-saving economies by eliminating caulked joints on long horizontal runs of downspout piping. Clow "IPS"* (threaded) Cast Iron Pipe is constantly being chosen for jobs like this because of its many economies and its corrosion-proof qualities—which assure dependable service for a century or more.

Clow "IPS"* (threaded) Cast Iron Pipe is available with plain or threaded ends, in 3, 4, 5, 6, 8 and 10" sizes in 18' random lengths. Also furnished with integral caulking hub on one end (other end plain) in 18' random lengths in 4, 6 and 8" sizes.

*"IPS" is iron pipe size O. D.

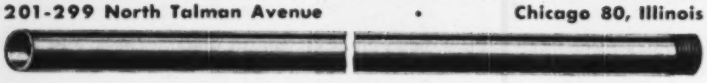
CLOW "IPS" CAST IRON PIPE CAN BE



on the job, with ordinary tools of the piping trade.

JAMES B. CLOW & SONS

201-299 North Talman Avenue • Chicago 80, Illinois



and their National Cast Iron Pipe Division, Birmingham, Alabama; subsidiaries Eddy Valve Co., Waterford, New York; Iowa Valve Co., Oskaloosa, Iowa.

Plant Expansion the Key

EXPANSION of this country's productive capacity by as much as 25% within the next five years is necessary, according to Sumner Slichter, Harvard economist, if we are to keep our present industrial position in the world. Mr. Slichter holds that such expansion is more necessary than controlling inflation. Consequently, he would have the government modify any of its financial policies that would put a check on plant expansion such as the excess-profits tax and its pay-as-you-go taxation program.

Industrial leaders too—and most prominently Ben Moreell, president of Jones & Laughlin Steel Corp.—have been pointing to our taxing policies as deterrents to necessary industrial growth. By allowing insufficient deductions for depreciation of industrial facilities in tax returns, the government has caused net earnings to be cut to such a point that they frequently can't support necessary new construction.

It might be thought that such statements are inconsistent with the present high volume of industrial building—nearly 50% ahead of last year, according to ENR figures. They are not, however, because the present boom is—so far—an artificial one, fed largely by the fear of inflation. What is needed is a set of policies that will assure steady industrial building growth year by year in keeping with increases in population and advances in technology. America grew great by satisfying increasing demands through steadily increasing production. It can only remain great by the same process. Until taxing policies are focused on encouraging investment in production facilities, we are in danger of standing still or going backward.

Specification for Prestressing

LACK OF A DESIGN SPECIFICATION is one of the biggest drawbacks to the use of prestressed concrete, which could be very valuable now in conserving steel and cement. The technical societies concerned are at work developing design rules, but final formulation may take years. In the meantime, even a tentative recommendation based on experience to date might encourage designers to make greater use of this technique.

Sufficient data are available to permit prestressed-concrete members to be designed with as much confidence as members of more familiar type. The greatest danger lies in trying to apply the same concepts of safety factor to the steel or the concrete in a prestressed member as are applied when these materials are used conventionally. The reason is that the stresses in a prestressed member may not be proportional to load. (ENR April 13, p. 21).

It would not be wise, for example, in view of the different types of steel that might be used, to specify design values for prestressing steel as a percentage of the ultimate strength or of the yield point. Allowable stresses determined percentagewise may be larger than the creep limit, which would be dangerous; or considerably smaller, which would be wasteful. Many designers feel that the steel can be safely used up to its creep limit, that is, the stress above which strains increase under long-time load without increase of load.

Also, even though prestressed concrete can be designed free of cracks under all loads, to require this condition regardless of service would be unduly harsh. Thus, while good practice should call for a crackless concrete under dead load alone, it could be left to the designer to decide whether or not cracking should be allowed under other loading.

If decisions could be reached on the relatively few basic points—such as the two discussed above—a tentative specification could be drawn quite promptly. Moreover it would be one that, when applied with good engineering judgment, should enable safe prestressed-concrete members to be designed with a minimum of excess material.

Better, Cheaper Airports

IT WON'T BE LONG before the criss-cross pattern of runways that has been the hallmark of airports will be as obsolete as the steam shovel. Instead the airport of the future will be a long, slender affair with single or multiple runways all going in the same direction. Taxiways bleeding off of the runways at intervals throughout their length will provide the only break in the straight-line layout.

Ample justification for such prophecy came out of discussions at the Airport Transport Division session of the recent ASCE meeting in Chicago. Taking part were representatives of the CAA, the airline operators and airport designers. And they agreed that a relatively small device—the caster landing gear, which permits planes to land in strong crosswinds—will deserve the principal credit when this significant change in airport layout occurs. In conjunction with blind-flying electronic aids, the caster gear will greatly increase the utilization of airports in bad weather.

Such coordination of aircraft design with airport design has long been needed. That it comes now with promise of such spectacular results is gratifying indeed. The new runway pattern should reduce land needs and costs. Both design and construction will be simplified by the single-directional runways. Expansion to meet future growth will be much easier—just add a parallel runway. And fewer runways will be required, probably only ½ as many. This airport of the future will be a better airport, and it won't cost as much as at present.

MAKE HIGHWAYS

SAFER...

with ATLAS WHITE REFLECTING CURB

AT NO EXTRA COST

All the advantages of air-entraining portland cement — increased plasticity, easy placement, higher resistance to effects of freezing-thawing weather and scaling action of de-icing salts, greater durability — now available. Ask about

ATLAS WHITE DURAPLASTIC*

Inadequate visibility of the road ahead is the cause of many of today's highway accidents. A smash-up may occur when a driver misjudges the curb when passing a big truck...a driver trying to make time may fail to note a sudden curve in the road. White Concrete Reflecting Curb made with Atlas White Cement clearly outlines the road ahead, increases visibility, *and helps to prevent accidents.*

Atlas White Reflecting Curb not only marks the road in daylight, but by night its saw-tooth faces catch and reflect headlight rays back to the driver. Thus, a continuous ribbon of highly visible curb clearly defines the highway ahead. And on rainy nights, when safety is most needed, the reflecting curb becomes even more visible.

Send for full details. Write to Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Ave., New York 17, N. Y.

**"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Co.*

ATLAS WHITE CEMENT

For White Concrete Reflecting Curb

ENGINEERING NEWS-RECORD

OCTOBER 26, 1950 VOL. 145 NO. 17

"Frivolous" building halted, stiffer curbs seen likely

National Production Authority stops construction of race tracks, roller coasters; move aimed at critics of housing curbs; later order to hit commercial building

Construction this week has the dubious distinction of being the first industry to be hit with an "end-use limitation order" from defense controls agencies in Washington.

A new regulation by the National Production Authority prohibits the building of amusement and recreational facilities.

After this week, only hardship cases will have the right of appeal–and chance for approval–to start construction of new resort cabins, roller coasters, theaters or dance halls. The order prohibits half a hundred specific pleasure structures.

Only a small percentage of total construction volume will be affected by the ban. No adequate statistics are available for estimate, but it is doubtful that the regulation will touch more than $500 million to $750 million out of an annual construction outlay of nearly $25 billion.

This first order is mainly psychological and political.

Labor unions and veterans were saving bitter things about tightening credit on private home-buyers while still permitting "frivolous" construction.

• **Stiffer order due**–But it has a much greater significance for construction people. It is the first indication of what will be done later–and probably on a much broader scale. Only the lack of administrative personnel in NPA prevented an immediate start on a general construction control regulation.

Such a regulation may be expected in a few months, as soon as the Construction Controls Division of NPA has had a chance to recruit the 200 or 300 people needed to administer it. When it comes, the general order will continue the prohibition of "frivolous" construction but will exempt a large mass of projects for military, industrial and essential public purposes. Housing, too, will be left to controls through credit regulation by the agencies already functioning.

• **Commercial work too?**--Most important of the areas to be covered by the expected order will be the wide middle ground of commercial construction. Projects in that area will have to get an NPA license before they can proceed.

• **Details**–Amusement and recreation projects were the last to be freed of controls following War II. After everything else had been cleared, certain projects in the so-called "frivolous" class remained under prohibition until April 1, 1948.

NPA's new order exempts all jobs costing less than $3,000. (Some such exemption is necessary to reduce the load on the already heavily overburdened controls staff.)

Likewise exempted are bona fide building maintenance and current repair jobs to prevent depreciation.

Violators of the order are subject to fine or imprisonment or both. These penalties are believed to apply not only to the owner or investor who puts up the money, but also to the contractor or supplier who wilfully connives in a violation although he had no part in its conception.

• **Difficult policing**–Construction prohibitions are notoriously hard to enforce. In War II, famous order L-41 was the most violated of all WPB regulations. Execution of the new NPA order will depend on the patriotism and viligance of many private citizens.

Policing by the NPA construction division is out of the question. But complaints will be investigated, and prompt legal action taken against violators.

To comply with the requirements of the Defense Act, Administrator William H. Harrison of NPA held a hurriedly-called meeting with a large number of industry representatives last week.

To a man, the industry people told the NPA officials that the prohibitory order was no way to control construction. Better, they said, to channel every kind of materials distribution through priorities, allocations or other devices.

PENNSYLVANIA TURNPIKE EXTENSION OPEN–Monday, Oct. 23 turned out to be the day the Pennsylvania Turnpike's 100-mi eastward extension was dedicated. Turnpike Commission officials and contractors had been shooting at October first, the tenth anniversary of the original road's opening, but weather delays foiled the hope. Map shows the new route, which runs from the former eastern terminus, at Carlisle, to a point near Norristown. Important previous connections are shown as dotted lines: Route 22 has handled New York-bound traffic, and 422 has taken traffic to Philadelphia. Parallel Route 30, the historic Lincoln Highway, also is shown. Eastward extension construction was described in ENR June 15, p. 41.

Texas contractor fights AFL unions in sweeping anti-closed-shop suit

Brown and Root seeks injunction against tactics that would force unionization; labor leaders fear effects if suit is successful

James A. Lee
McGraw-Hill Houston Bureau

Brown and Root, Inc., contractor with headquarters in Houston, Texas, never has dealt with unions as bargaining agents for its employees.

However, for several years there has been a drive by the unions to force the company to unionize.

On Oct. 2, Brown and Root went to the state courts of Texas in defense of its open-shop policy, seeking relief under the labor laws of the state. Suit was brought under the Texas anti-trust law, as amended by the 1947 legislature to include labor unions, and also under the so-called "right-to-work" law passed by the same legislature. The latter law outlaws closed-shop.

• **Hearings begin**—Seeking an injunction to stop certain union practices, the firm has filed against American Federation of Labor building crafts union in one of the most sweeping legal actions of the kind ever brought in a Texas court. A master in chancery began taking testimony last week in Austin. Meanwhile a temporary restraining order is in effect against the defendants.

Defendants are: The AFL and its vice-president, Richard Gray; the AFL Building and Construction Trades Department; Texas State Federation of Labor; Texas State Council of Carpenters; Carpenters District Council of Houston; building and construction trades councils of Houston, Austin and Beaumont; 33 building trade locals of Houston, 20 of Beaumont and 11 of Austin.

Aim of the suit is to break up what the firm alleges is an unlawful conspiracy to force it to adopt a closed shop. The plaintiff also seeks $98,450 damages resulting from an alleged "conspiracy and a combination of capital, skill and acts" of the labor organizations to force Brown and Root to hire only union labor. The acts, the petition charged, included picketing and boycotting of Brown and Root, its projects, supply agencies and customers, and maintaining the firm on an "unfair list," in violation of labor laws of the Texas Legislature.

• **Temporary order issued** – Judge Charles O. Betts in Ninety-Eight District Court on Oct. 2 issued the temporary restraining order against the labor organizations pending hearing on the injunction suit.

The temporary restraining order, based upon the plaintiff's allegations, enjoins the defendants from committing any of these acts against Brown and Root:

Picketing its place of business or job sites.

Placing or maintaining its name on any unfair list.

Engaging in any conspiracy to force a closed shop upon the firm by secondary boycott, strikes, picketing, monopolies, or other conspiratorial or coercive means.

• **The union story**—The union attorneys claimed that Brown and Root, Inc., and Herman Brown, president, have engaged in a campaign to destroy the trade union movement and the defendant labor organizations.

"They have consistently refused to recognize or deal with labor unions, or to abandon the employment practices which permitted them to make millions in profits at the expense of their employees and the living standard of the entire community," the union motion stated.

Union attorneys argued that issuance of the restraining order without notice and with "grossly inadequate bond" was of "incalculable damage" to the defendants, and asked that bond posted by Brown and Root be increased from $5,000 to $460,000.

"Brown and Root must be getting pretty desperate to run up to Austin to get a restraining order without giving us a chance to defend ourselves," Charles E. Jones, executive secretary of the Houston Building and Construction Trades Council, said.

"If they want a showdown in court, we're ready to meet them," he added.

Mr. Jones said he did not think Brown and Root will get an injunction order, because the union hadn't committed any violations to warrant this.

While most labor leaders were inclined to play down the temporary restraining order itself, most of them expressed fear that an injunction order would hurt organized labor in Texas.

One labor spokesman said such an action would take away labor's last weapon to fight an open-shop contract, and will start an anticipated open-shop movement under the protection of the Taft-Hartley Act.

He said an injunction will be more or less fatal to unions, and cited similar instances 40 years ago in the East and again right after World War I, when labor suffered many defeats at the hands of the courts.

Boston MDC payroll Case grows hotter

Minority member gets court order for records inspection, but majority can block until after election.

Harold E. Stevens, only Republican member of Boston's Metropolitan District Commission, had his day in court October 16, when he was heard on a mandamus petition to force majority members of the commission to let him see records that might support his party's charges of payroll abuse (ENR Sept. 28, p. 26).

On that day Judge R. S. Wilkins of the Supreme Judical Court of Massachusetts ordered that Commissioner Stevens be allowed to examine the records of the Board. Judge Wilkins said in part, "It seems elementary that the petitioner has the right to examine the records in order properly to perform the duties of his office. One such duty is participation as a commission member in the appointment and removal of officers and employees, including inspectors. Among such duties is participation in the investigation the commission has voted to undertake. To participate effectively he should be allowed to prepare himself beforehand if he chooses."

Stevens wants to see the records before the Nov. 7 elections. The majority had refused Stevens access to the records before the commission started its self-voted investigation scheduled Nov. 15.

In spite of this decision Stevens still will be denied present access to the records at the commission's office. The Board has the right to appeal to the full bench of the High Court within 20 days, which should carry the matter beyond Nov. 7. The refusal of the majority of the Board to permit Stevens to examine the records before Nov. 15, has created a front page sensation in the Bay State. Local comment in Boston is to the effect that the record must be loaded with political dynamite for the majority of the board to take this position.

Charges that the MDC overloaded its payroll with political hacks have swept the state since former Chief Engineer Karl R. Kennison resigned in protest against this alleged irregular practice.

The Board had announced that it would investigate the payroll situation after election.

Since the Kennison resignation 119 persons have been separated from the Department, whose executive explanation is that the jobs to which they had been assigned have been completed or carried far enough along to warrant the men's discharge from the organization.

Gayle G. Armstrong Dies; was to be V. P. of AGC

Gayle G. Armstrong, 50, who had been nominated vice president of the Associated General Contractors of America, died at Roswell, N. M. Oct. 15.

Mr. Armstrong was educated at Washington & Lee University, and became partner and manager of construction of his company in 1928. Among his outstanding jobs are the Fort Wingate Ordnance Depot, Hobbs and Fort Sumner airports. He was chairman of the AGC's public relations committee, a member of the executive committee, and former chairman of the Highway Contractors Division.

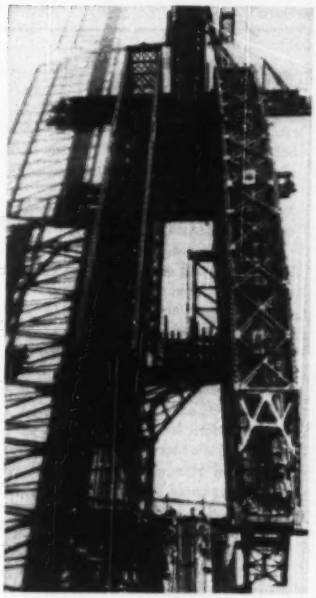
In addition to highway and airport building, his ranching and farming activities brought him into national prominence in 1945, when he was named special assistant to the Secretary of Agriculture, and was appointed deputy administrator of the Production and Marketing Administration.

Robert E. Doherty dies; ex-head of Carnegie Tech.

Robert E. Doherty, 65, president emeritus of Carnegie Institute of Technology, died at Scotia, N. Y., Oct. 19.

Doherty, who was president of Carnegie Tech from 1936 until his retirement last July 1, was a 1909 graduate of the University of Illinois.

As president of Carnegie Tech., Dr. Doherty established a method of engineering instruction in which emphasis was laid on development of individual competence. The institute developed extensively under Dr. Doherty's leadership. In 1941 he was appointed chairman of the production planning board of the OPM.



BRIDGE-MOVING DAY ON THE I.C.—Old truss span erected in 1888 is nudged 34 ft upstream to make way for a new 518-ft single-track truss span—first step in the Illinois Central's $6,500,000 program for replacing the entire superstructure and modernization of its single-track bridge over the Ohio River at Cairo, Ill. The new span weighing 1,760 tons was erected complete on steel-truss falsework and three bents (at right) then moved 34 ft upstream into final position. The old span, resting on two temporary bents, will be launched into the river, raised and cut up for salvage. The entire moving job took only 20 hours—from 6 am Oct. 16 to 2 am the following day. The American Bridge Co. holds a contract for removing the 9 old truss spans (ENR Apr. 13, 1950, p. 41) and fabricating and erecting the new spans.

Asphalt concrete cheapest in Jersey turnpike bidding

George M. Brewster & Sons, Bogota, N. J., were low bidders on the first section pavement for the New Jersey toll turnpike when bids were opened Oct. 18, by the New Jersey Turnpike Commission. The section covered by the bidding is between Allentown, which is southeast of Trenton, and the Raritan River below New Brunswick, a distance of 24.5 miles.

Alternate proposals were asked: (1) 10-in. portland-cement concrete pavement on 6 in. of special subbase, or (2) 4½ in. of asphaltic concrete pavement with 8 in. of macadam base and 6-in. subbase. Total quantity is 792,000 sq yd in two 24-ft pavements.

The top 2 in. of the macadam base under the asphaltic concrete is to be penetrated.

Bids also were asked on three types of shoulders: Type F, 3 in. of penetration macadam on 7 in. of compacted pit-run gravel or stone; Type G, 10 in. of compacted gravel or stone topped by a double bituminous surface treatment, and Type H, 10 in. of compacted gravel or stone.

Brewster's bids were the lowest in all cases. They ranged from $7,167,276 for bituminous concrete with Type H shoulders to $7,279,776 for Type G shoulders and $7,662,276 for Type F shoulders.

Brewster's bids for portland-cement concrete paving with Type H, G and F shoulders were $8,855,426, $8,976,926 and $9,350,518 respectively.

The two remaining bidders were S. J. Groves & Sons and Johnson, Drake and Piper.

The engineers estimates were slightly lower than the Brewster bids.

On a square-yard basis, Brewster's bids were $5.80 for asphaltic, and $8.05 for portland-cement concrete.

Seabee pontoons had new test at Inchon

When the Marines made their Korean landing at Inchon, their equipment and many of them came ashore on two pontoon piers that the Seabees built (ENR Oct. 12, 1950, p. 25). That is, they could do this during 4 hours of each cycle of the 30-ft-high tide. For the remainder of the cycle the pontoons rested on a mile-wide mud flat and could not be approached from the sea.

These conditions presented a new type of test for the ingenious strings of steel boxes developed by the Navy's civil engineers and first used in the Sicily landings in World War II. Captain A. D. Hunter, deputy chief of the Bureau of Yards & Docks, told the members of the New York Metropolitan Section of the American Society of Civil Engineers about the pontoons in a talk Oct. 18.

Captain Hunter revealed that the steel boxes were shipped from the Seabee base at Port Hueneme, Calif. to Japan, where they were assembled into the piers. These were towed the 500 miles to Inchon without damage, despite an average speed of 2½ knots.

During World War II Seabee pontoon piers were used in the Pacific to aid landings where the water depth at their outer ends was 300 fathoms. And in the Normandy landings they were left high and dry when the 18-ft tide went out. The new condition met at Inchon was that, unlike the hard sandy beach in Normandy, the tide flats were soft mud. The pontoons rose from the mud without damage when the tide came in, so they met the new test satisfactorily. But they were useless when the tide was out. "We are actively working on that shortcoming now" said Capt. Hunter. He also mentioned that beach stabilization, mobile breakwaters and landing craft salvage are problems that are receiving attention in the Seabees' efforts to improve their effectiveness in amphibious warfare.

Preparedness seen top public works job

The ominous shadow of an enemy attack on U. S. cities—and the resultant responsibilities of public works agencies and officials—formed a gray background for the 56th annual congress of the American Public Works Association in N. Y. City last week.

As always, the assembled municipal, state and federal officials discussed their own local problems—of traffic-control, sewage disposal, relations with the public. As always, the round-table discussions produced answers that the officials could apply to their own cities.

There was, of course, sightseeing to be done, dinners to attend. More than 60 manufacturers filled the drill-field of the 14th St. Armory with exhibits of their newest wares, and offered information on uses to which the machines could be put.

But the over-all theme was clear-cut and dominant:

The responsibility of the public works departments, their leaders, and the engineering and construction men of the communities, to keep service going if possible, restore as quickly as may be necessary, in the event of war-caused disaster.

• **Keynote**—Arthur W. Wallander—once New York's police commissioner and now its civil defense director—sounded a keynote:

"The field of public works—whether it be water supply, sewage treatment, bridges, public buildings . . . is vital to defense. The skill, experience and knowledge of your membership are the basis on which public works function properly."

Pointing out that the continuing operation of "back home" facilities can be vital to any "front" operations, Wallander detailed New York's plans for coordinating its various agencies and the construction industry at large in the event of an attack that might disrupt essential services to the city's 8,000,000 residents.

• **Records needed**—Wallander said that, in addition to city departments, contractors in the heavy construction field are being questioned as to the amount of equipment and trained personnel they would have available. The information is being tabulated for ready reference, and will be kept up to date through methodical, periodic checks.

• **Political warning**—New York's Acting Mayor, Vincent R. Impellitteri, took the occasion as a good one to warn his listeners against political interference with needed public works projects.

"You . . . must guard against political candidates for public office who promise much more . . . than the city's finances will permit. Bitter disappointment by the people and a most unfavorable reaction upon you are the inevitable consequences," he said.

"I believe the people are fed up with the old ideas that their chances of getting a new school, a hospital or a library are dependent on politicians. They are now more inclined to form their own judgments on matters about which they formerly relied upon the statements of local politicians.

REWARDING INCENTIVE

An annual award of $500—to stimulate original thinking and advancement in municipal sanitary-engineering practice—has been established by C. W. Nichols, Sr., chairman of the board, Nichols Engineering and Research Corp., New York. The award will be made through the American Public Works Assn.

Named after its donor, the award will be given for an outstanding contribution in the field. Some of the possibilities are: A significant technical paper; a new process or a new method of operation. The award is limited to these specialties: Water treatment and distribution; sewerage and sewage disposal; refuse collection and disposal; and street sanitation.

A candidate for the award must be a member of the association, working in the broad field of municipal sanitation, and be an appointed or elected municipal employee.

The recipent will be chosen by a committee appointed by the association's president and approved by the board of directors. Candidates are to be sponsored by chapters or five active members.

• **Other matters**—Other discussions during the four-day meeting included: Good street lighting; municipal budgeting; safety in city construction operations; causes of damage to pavements; the need for action to solve air pollution problems; methods of cleaning streets; and the need for a good public relations program to acquaint taxpayers with actual facts regarding the administration of their city.

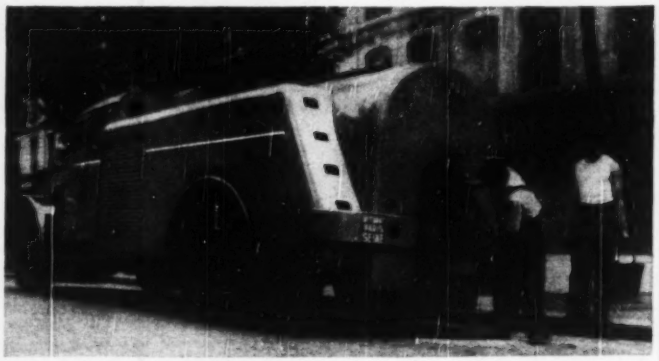
Police protect bridge job after contractor is hurt

Ohio highway patrolmen are closely watching the progress of a state highway bridge job—and not because they want to become sidewalk superintendents. The project is near Youngstown; it involves installation of a new steel floor, to be completed by Nov. 15 at a contract price of $84,563. Hatcher Bros., Mingo Junction, Ohio, are the contractors.

Meanwhile, Thomas Matcher is recovering in a Warren hospital having sustained a fractured skull during a dispute with members of Youngstown Local 207, Structural Iron Workers, AFL. The AFL workers resented Hatcher's hiring bridge workers who were members of the United Mine Workers.

Clement V. Leach, Youngstown, has been bound over to the Mahoning County grand jury, charged with assault with intent to kill. Leach was charged with throwing the almost unconscious contractor off the bridge into water 20 ft below on Sept. 30.

During the argument, two other Hatcher workers also were thrown into the water. Welding equipment and blueprints got the same dousing. Forty men were said to have participated in the incident.



STREAMLINED ROAD-OIL DISTRIBUTOR—This new, streamlined distributor is making its debut in Paris. Unlike its predecessors in the French capital (and many here in the United States) it has such "new-look" features as gleaming paint, rounded contours and balloon tires. (Wide World photo.)

CONSTRUCTION BUSINESS

Pipelines continue record construction

Pipeline construction for the first nine months of this year hung up another all-time record, which it will break again in October. The $479,605,000 in contracts through September is an increase of 250% over the same period of 1949. Then October comes along with the $98,966,700 line to connect Falfurrias, Texas and Joliet, Illinois for Texas Illinois Gas Pipeline Co. for which the first four contracts were reported last week (ENR Oct 19, p. 32) and a new record.

The nine-month record, by itself, is almost half the entire $995-million volume of all types of new, unclassified contracts written through September this year. It exceeds all pipeline construction in 1949 by 102%. It is already 33% above the previous record for this type of construction, set in 1948. Pipeline construction in '48 totaled only $363 million as reported by Engineering News-Record.

• **Other unclassified construction**—Private contracts let during the first nine months of this year in the unclassified list were $693 million, 112% above 1949's equivalent figure, and 110% above the same period in 1948. Big contributors to the increase—other than pipelines were new telephone contracts, up 230%; drivein theaters—which this year added $16,454,000 in new contracts—and other private unclassified, up a healthy 47%.

Federal unclassified showed some decreases under the breakdown, but a public increase of 21% was realized overall. A large dollar increase in state and municipal expenditures on airports, up 26% over last year's equivalent, also contributed.

The overall unclassified total for the nine months is 73% higher than corresponding volume last year.

Unclassified Contracts

	1950 9-mo	% chg from '49
Private		
Pipelines	$479,605,000	+250
Transmiss'n line	83,477,000	−17
Railroad	12,768,000	−8
Telephone	4,367,000	+230
Radio	2,603,000	−54
Airports	2,050,000	+42
Drivein theaters	16,454,000	+47
Other private	83,590,000	
Total private	**$692,932,000**	**+112**
Federal		
Airports & Airbases	5,035,000	−6
Hangars, Bldgs	19,279,000	+11
Airport Hosp	1,491,000	−88
Airport Facilities	5,553,000	−51
Shipyards	1,567,000	+880
Other federal	$86,840,000	+54
State & municipal		
Airports	57,202,000	+26
Subways	16,495,000	−6
Other	109,302,000	+26
Total public	**$302,163,000**	**+21**
Total unclassified	**$995,095,000**	**+73**

All road building records fall, top $1 billion

Highway construction this year is topping all previous records. It is 25% higher, for the nine months, than the former records set in 1948 and is 35% higher than 1949 as reported by Engineering News-Record.

The highway total for all states through October 19 is $1,035,500,000. This tops $1 billion for the first time as reported by Engineering News Record. Highway contracts are still running 35% higher than in 1949. And these highway contracts do not include the separate awards that have been made for bridges.

The big highway builders of 1950 are led by Pennsylvania. For streets, highways and turnpikes but not including separate contracts for bridges, Pennsylvania public officials have awarded $124,366,000 in highway contracts in the first nine months of 1950.

Texas has $62 million, New Jersey $56 million, Massachusetts $52 million, California $50 million, New York $48 million, North Carolina $40 million.

Bridges add another $27.5 million for Pennsylvania, $74.7 million for New Jersey and its rapidly progressing Turnpike and $32 million for New York. These are the big bridge states this year.

With 1948 setting the previous high for highways the following 1950 comparisons will be with two years ago instead of with last year, and for highways only—no bridges.

New England reports awards of $62,984,000 an increase of 107% with Massachusetts at $51,558,000 in awards showing a 295% gain over the record year, 1948.

New Jersey shows the big percentage increase in the Middle Atlantic states. Her $55,795,000 volume is 344% higher than in 1948. Pennsylvania's $124,366,000 is a 33% rise from 1948. These raise the Middle Atlantic total to $268,533,000 an increase of 50% over the 9-months of two years ago. New York at $48,437,000 shows only a 10% increase.

The South as a whole shows a total of $192,344,000, a 27% rise from 1948. Florida has the biggest percentage gain, 218% to $18,866,000. Kentucky is up 193% to $32,001,000 while North Carolina with its top $40,491,000 volume has a percentage gain of 128.

Only the Middle West states are below 1948. Highway contracts in these five states are down 18% of $100,673,000: Illinois is down 58% to $14,336,000, Michigan down 25% to $11,4770,000, Wisconsin down 9% to $24,057,000. Ohio is up only 10% to 36,191,000 and Indiana is up 7% to $14,619,000.

The states west of the Mississippi score $248,279,000 for the nine months, 22% more than in 1948. Texas contributed $61,522,000 of this —a 16% increase over 1948. Highway awards this year are running behind 1948 in three states: South Dakota, down 50%, Wyoming, down 14%, Colorado down 23%. Oklahoma shows a 92% increase to $27,149,000, Minnesota a 63% increase to $26,435,000.

California's $49,595,000 is 3% below her 1948 volume of road work and this holds the Pacific states down to $104,883,000 for the nine months, only 12% above their 1948 highway construction. Washington with $21,430,000 is 55% above 1948 and Oregon at $11,620,000 is only 6% above the previous year.

Building permits drop during month of September

Building permits for 215 cities sagged to a $408,266,993 value during September, Dun & Bradstreet reports. This represents a 25.9% unseasonal drop from August's $550,997,973. September permits are back to levels of last year, only 4.4% above September of last year.

Building plans filed in New York City were 36% below the 1949 equivalent figures this September. Dollar value of plans filed amounted to $30,673,613.

Permit valuations for 215 cities (cumulative) for the first nine months of this year reached a tally of $4,194,163,371. This is the highest ever recorded for the period, an increase of 43.7% above the $2,918,738,777 of a year ago.

New York City's cumulative for the first nine months of 1950 is up 29.1% over last year. The score: $509,611,970.

East Central states produced the largest volume, $885 million, a 48.9% increase over 1949. Next are the Middle Atlantic states with almost $884 million and a 36.1% rise from 1949. South Central states top $720 million for a 63.7% gain. Pacific states $684 million for a 31.4% increase, then South Atlantic at $397 million for a 33.9% rise. West Central at $296 million for a 59.3% gain, New England at $206 million and a 42.4% increase, and the Mountain states $121 million for a 40.1% rise.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 75, went to press.)

Auto Plant—J. A. Utley Co., Royal Oak, Mich. will construct a $65,000,000 auto manufacturing plant, at Flint, Mich., for the Buick Motor Division, General Motors Corp., Flint, Mich. The one-and two-story, 660,000-sq ft project was designed by Albert Kahn Associated Architects & Engineers, Inc., Detroit.

Steam Generating Plant—Southern California Edison Co., Los Angeles, Calif., plans to construct a steam electric generating plant at Fontana, Calif. Cost is about $30,000,000. Contract for design of project will be let in about two weeks and construction will begin shortly after.

Tuberculosis Hospital—Gerace & Castagna, Inc., Jamaica, N. Y. was low with a base bid of $10,540,940, when the Department of Public Works, City of New York, opened bids Oct. 19, for a Tuberculosis Hospital in Bronx Boro. Low bids on the mechanical work for the project totalled over $4,500,000, additional.

Vehicular Tunnel—Quebec-Levis Tunnel, Rimouski, Que. plans vehicular tunnel between Quebec City and Levis, Que. to cost about $20,000,000. Plans are underway and work may be started in a few months.

Housing—St. Louis Housing Authority, St. Louis, Mo., plans first of four projects in De Sota–Carr Housing project to cost $12,000,000. The unit, designed by George Hellmuth & Associates, St. Louis, will consist of eleven 11-story dwellings.

Office—Gilbralter Insurance Co., Dallas, Tex., received low bid for constructing a 20-story office building in Dallas from J. W. Bateson Construction Co., Inc., Dallas, at $4,183,000. Thomas, Jameson & Merrill, Dallas, are architects.

Generating Plant—Monongahela Power Co., Fairmont, W. Va., and Potomac Light & Power Co., Washington, D. C. (subsidiaries of West Penn Electric System) plan 150,000-w. electric generating station, on Cheat River, Preston Co., W. Va. estimated cost is about $20,000,000. Sanderson & Porter, New York, are consulting engineers.

Housing—San Juan Housing Authority, San Juan, P. R., awarded contract for second section Luis Llorens Torres Housing Project to Nevares & Morales, San Juan, at $3,288,000. The first section, costing $3,896,000 is underway and bids will be taken by the authority on Oct. 31, for third section.

Hospital—New Mount Sinai Hospital, Toronto, will take bids November 17 for hospital in Toronto, Ont., to cost abount $4,000,000. Kaplan & Sprachman; Govan, Ferguson, Lindsay, Kaminker, Maw, Langley & Keenleyside and Morrison, Hershfield, Millman & Huggins, Toronto, are architects.

Biology Building—S. N. Nielson Co., Chicago, Ill. was low bidder at $3,999,000 for constructing biology building at Argonne National Laboratory, near Lemont, Ill., at the U.S. Atomic Energy Commission, Lemont, bid opening October 13. Voorhees, Walker, Foley & Smith, New York, are architects.

Catalytic Cracking Plant—Farmers Union Exchange, Billings, Mont., plans to modernize catalytic cracking plant at Laurel, Mont. Estimated cost is $3,000,000. Universal Oil Products Co. and Refinery Engineering Co., both of Tulsa, are engineers.

Apartment—Bennett & White of Edmondton, Ltd., Edmondton, Alta., has been awarded contract for 52-apartment building in Edmondton, by the Strathearn Heights, Inc., and Alvin Enterprises, Edmondton. Cost will be about $3,500,000.

Office—Jackson M. Porter Inc., Syracuse, N. Y. Plans constructing office building in Syracuse at about $3,000,000. Emory Roth & Sons, New York, are architects.

Sludge Plant—Peter Kiewit Sons Co. and Fred J. Early, Jr., Inc., were low bidder at $2,122,500 for constructing clustriation and sludge concentration system at Hyperion Activated Sludge Plant at El Segundo, Calif., when Board of Public Works, City of Los Angeles, opened bids October 18.

Shopping Center — William C. Weaver, Jr. and W. H. Criswell, Nashville, Tenn., plan to build shopping center in Nashville. Estimated cost is $2,000,000.

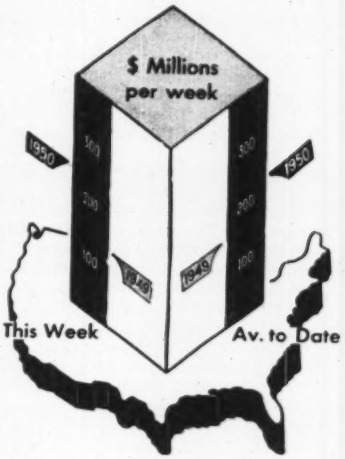
Spavinaw Dam—Guy H. James, Oklahoma City, Okla. has been awarded a $2,407,575 contract for constructing the Spavinaw Dam for the City of Tulsa Okla., water supply. W. R. Holway, Tulsa, is engineer.

Hospital—Seattle, Wash., General Hospital, plans a new hospital in Seattle to cost about $3,000,000.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926	1949
Constr. Cost	Oct. '50	534.23	256.91	112.03
Bldg. Cost	Oct. '50	396.23	214.19	112.63
Volume	Sept. '50	390	171	139



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

Week of Oct. 26 '50	This Week	Cumulative 43 wks 1950	1949	% chge
Federal	$17.2	$1,012.3	$887.9	+14
State & Mun.	80.1	3,099.8	2,647.1	+17
Total Public	$97.3	$4,112.1	$3,535.0	+16
Total Private	147.8	5,802.9	3,169.6	+83
U. S. Total	$245.1	$9,914.9	$6,704.6	+48

Contracts by type of work

	This Week	Cumulative 43 wks 1950	1949	% chge
Waterworks	$5.4	$191.1	$178.3	+7
Sewerage	7.3	229.3	225.2	+2
Bridges	5.5	318.4	290.3	+10
Highways	29.6	1,055.1	783.6	+36
Earthwork, Waterways	1.7	337.3	448.6	−25
Buildings:				
Public	31.5	1,388.9	1,017.0	+37
Housg., pub.	3.7	257.7	333.9	−23
Housg., priv.	19.3	2,786.6	1,452.5	+92
Commercial	16.0	823.8	495.4	+66
Industrial	105.2	1,366.7	854.3	+60
Unclassified	19.9	1,150.0	625.5	+84

NOTE: Minimum size projects included are: Waterworks and waterway projects, $25,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

Figures not available

Floating bridge proposed for Puget Sound Crossing

A constant-level floating bridge that would be unaffected by tidal action or driftwood is one of two types under consideration by the Washington State Toll Bridge Authority for linking Seattle with the area to the west of Puget Sound.

Deck for the constant-level bridge would be supported above maximum tidal action by piers resting on submerged buoyancy chambers anchored by cables. Ships would pass through an inverted-lift center segment.

The second type—a surface floating bridge, supported by pontoons—would be cheaper to build but would offer a problem in disposal of driftwood authority engineers said. It would rise and fall with the tide, the necessary flexibility being provided in the approaches. Large ships would pass through a telescoping center-section while small boats would go under the approaches, as would be the case for the constant-level structure.

Either bridge, if constructed, would extend 14,600 ft. from Seattle to Vashon Island, with a suspension bridge from the island to the mainland on the west.

The next session of the state legislature will be asked to appropriate further engineering funds for the $50,000,000 project.

Highway truck operators seek better primary roads

Directors of the American Trucking Associations at their 17th annual meeting recently in New York called for "all highway user groups to go into action to insure adequate and sound highway building programs." Describing highways as "our major arteries for movement of material and people in time of conflict as in peace."

The ATA's resolution reaffirmed the organization's agreement with the National Highway Users Conference as to the importance of concentrating available federal-aid funds on the nation's primary road system instead of spreading those funds over both the primary and secondary systems. "Time is short and the need is acute," said the ATA, and "important mileage of our primary highway system is inadequate and absolete."

The United States, the resolution added, "is spending billions for war production without making certain of the means of war transportation . . . No program of rearming this country for the protection our our citizens can have any meaning if this condition is not remedied."

AFTER TEN LONG YEARS—Official ceremonies open the new, aerodynamically stable Tacoma Narrows bridge Oct. 14.

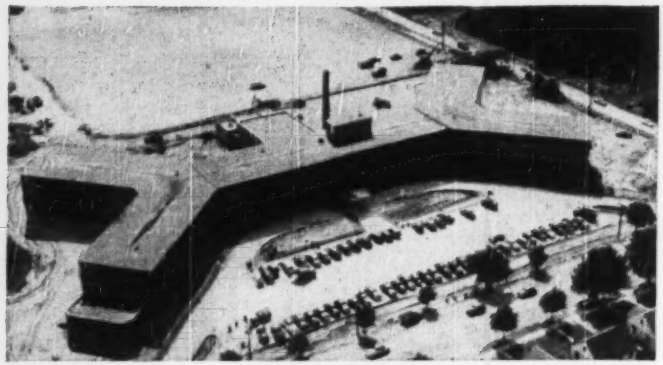
Tacoma Narrows again bridged

A new $14,000,000 suspension bridge over the Tacoma Narrows west of Tacoma, Wash., was opened to traffic Oct. 14, to replace the slender structure that collapsed Nov. 7, 1940, during a 42-mph wind. The previous span had been in service only four months when the disaster occurred. (ENR Nov. 14, 1940, p. 1).

This new bridge is wider than its predecessor, having four 9-ft traffic lanes divided at grated roadway slots 2 ft 9 in. wide in the interior and 18 in. wide at the curbs. These gratings will help minimize wind stresses on the bridge, it is believed. A trussed bracing system replaces plate girders used for deck stiffening in the original design. The old bridge had two lanes.

The $14,000,000 cost does not include piers, which were salvaged from previous construction and altered to support the new work. New construction has been financed with insurance from the failure, and with bonds of the Washington State Toll Bridge Authority. Bonds will be retired from toll receipts. Financing looked difficult at first, because bonding houses remembered the earlier trouble, but wind tunnel tests were used to good advantage in demonstrating the new design's improved stability.

REMEMBER THIS?—When "Galloping Gertie," the original Tacoma Narrows bridge, collapsed in 1940, hundreds of pictures were taken. This is one of several published in ENGINEERING NEWS-RECORD.



NEW JERSEY'S "PLAIN JANE"—Costing only $1.04 a cubic foot, this modernistic, functional structure houses the offices of New Jersey's Highway Department. The building, complete with parking lots, entrance plaza, landscaping and entrance roads, was paid for out of an appropriation of $1,700,000.

Earth movements halt bridge, hospital building

Unexpected shifts in underlying ground this month halted construction on three widely separated projects—two at Baltimore and one at Chicago.

At Baltimore, the city halted dumping earth fill on the Patapsco River mud flats near the unfinished Potee street bridge when it was discovered that one section of the bridge had shifted slightly out of position.

O. H. Schroedl, bridge engineer of the city's Bureau of Highways, said that the section of the $1,400,000 structure that shifted was pushed aside by the great pressure against its steel pilings by powerful mud waves caused by dumping of fill. One end of the section moved nearly 2 inches and the other moved more than half an inch.

Also in Baltimore, the Bureau of Water Supply said that investigations showed a large section of its new water main beneath the harbor must be moved because an error was made when the section was first lowered to the harbor bed.

Divers said that the main, connecting Fort McHenry to Fairfield, was not properly centered on a sort of subterranean boardwalk placed on the floor of the harbor to support the heavy metal pipeline. The wooden support structure was specified for about 3,000 ft. where deep silt deposits give insufficient support for the line. The main itself is about 50 ft. below the surface of the harbor.

Meanwhile, at Chicago, abnormal movement of piles stopped construction of the main building for a 500-bed veterans hospital in Chicago's West Side Medical Center. Piles have shifted from inches to a reported "couple of feet" and a survey is now being made to determine what remedial work will be necessary.

A total of 1,799 piles has been driven nearly 50 ft below ground level to a hardpan layer. Shifting of the piles is not unusual on big construction in Chicago, but this movement is reported to be beyond safe limits. The main building is to be eleven stories high and the hospital itself will cost about $7,000,000.

R. I. Housing Authority to scissor some "frills"

The Federal Housing and Home Finance Agency has told the Providence, R. I., Housing Authority to cut out some of the frills on two planned low-rent developments.

The agency told the authority that presidential approval of the two projects—one calling for a modernistic apartment house development not unlike continental European developments of the last 30 years—was conditional upon the authority's effecting "certain economies" in the specifications.

HHFA officials doubted that the $6,920,337 estimated cost of the modernistic Hartford Avenue project would meet the agency's room cost requirements. But Joseph H. Lyons, executive director of the authority, denied that the agency claimed that it had made specific suggestions for changes.

Lyons said that bids received recently on proposed new projects in Hartford and Bridgeport, Conn., were so far above the estimates upon which Admiral Terrace, a third Providence public housing project currently under way, were based, that the agency may have to revise all its cost estimates.

He added that he knew no other reason for HHFA questioning cost of the Manton Avenue project, which follows more conventional plans.

CIVIL DEFENSE

Emergency water—Tank trucks could bring New York city 240,000,000 gal of water daily (a fourth of the normal supply) under plans presented by the National Tank Truck Carriers, Inc., before the American Trucking Association's annual meeting in New York recently. Water for drinking would be chlorinated and assigned to special carriers, which had been cleaned and disinfected to rid tanks of effects of previous cargoes. Water for firefighting would have chemicals added, to increase anti-fire efficiency.

Taking stock—Contractors and builders of metropolitan New York, through their many organizations (Building Trades Employers' Assn.; New York Building Congress; General Contractor's Assn.; Mason Builders; The Moles; Building Contractors' Assn. and others) are compiling inventories of heavy construction equipment available in the city in the event of bombing or other emergencies. Listings will be turned over to the Department of Public Works, where Eugene M. Itjen, senior engineer, and his staff will cull the returns and draw up master lists.

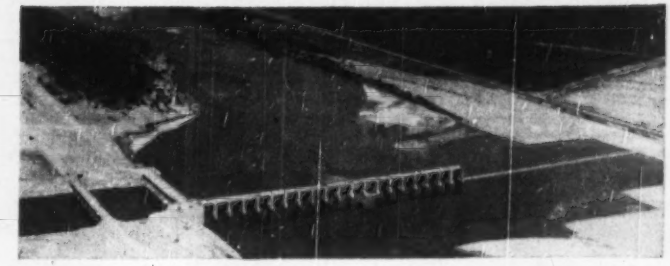
Location information on equipment will be available continuously for emergency use.

Plan advanced to unify bridges in St. Louis area

Leif J. Sverdrup, chairman of the Missouri-Illinois Bi-State Development Agency, has announced the agency's plan to acquire all highway bridges over the Mississippi, in the St. Louis area, and to use tolls to finance a system of expressways through and around St. Louis.

Citing the success of the Port of New York Authority in a similar venture, Mr. Sverdrup said that "the profits now being earned by these bridges, the savings in operating costs which would follow unified control and the tax savings that would be enjoyed by the agency could all be pooled and would provide substantial yearly funds."

The long-range plan foreseen by Sverdrup includes an outer belt superhighway completely encircling the St. Louis metropolitan area, in the two states, serving all major state and federal highways. Radial roads would connect this outer belt with each of the river bridges. All these routes would be designed as expressways, mostly on new locations.



MORELOS DAM, 8 mi below Yuma, Ariz., has been completed by Morrison-Knudsen Company de Sonora (ENR July 7, 1949, p. 58). The $7,000,000 structure diverts Colorado River water for Mexican agriculture. East abutments are anchored on Arizona side of river. West end is in Mexican territory and canal carries water to fields in Baja California. U. S. will deliver 1,000,000 acre-ft to Mexico until Jan. 1, 1980, and then will increase delivery to 1,125,000 acre-ft. The dam is 1,300 ft long and overflow section is 600 ft wide. Gate sections are 700 ft long. Diversion capacity is 8,000 sec ft.

R. C. Price will head water and power division

Reginald C. Price has been appointed director of the Department of the Interior's Division of Water and Power.

Director of project review and coordination for the recently established division, Price formerly was a special assistant to Assistant Secretary of the Interior William E. Warne. The new director succeeds William G. Hoyt, who retired from the department a few weeks after being named first head of the division (ENR, Oct. 9, page 85).

A native of Wisconsin and a graduate of the University of Wisconsin, Price is a civil engineer who was with the Department of Agriculture, the Wisconsin State Health Board, the National Resources Planning Board and the Federal Power Commission before becoming assistant professor of engineering at New York University in 1943. He went to Interior as an engineering economist with the Bureau of Reclamation in April, 1946.

B. G. Felkner new boss of Eklutna hydroelectric

Appointment of Byron G. Felkner as construction engineer signals a speed-up of preliminary work for the Eklutna hydroelectric project in Alaska for which Congress voted $1,100,000 in the supplemental bill to start the $20,365,400 project.

Plans and specifications will be pushed to permit taking construction bids as soon as possible, Reclamation Commissioner Michael W. Straus said. The Reclamation Bureau wants to start construction in the spring, as soon as the weather allows.

Felkner got the job largely because he is an experienced tunnel man. Water will be delivered to the 30,000-kw power plant through a 4¼-mi tunnel from Eklutna Lake. Once work is started, tunnel driving can go ahead throughout the year.

Until his latest appointment, Felkner was field engineer on the Boysen Dam project in Wyoming, which includes a 1.35-mi railroad tunnel. Long before that, he had been a contractor's superintendent on tunnel construction during the building of the Los Angeles Aqueduct from Parker Dam.

Eklutna will increase the firm power supply in the Anchorage area. Additional power is badly needed there, as Interior Secretary Oscar L. Chapman pointed out, to meet military requirements. The plant will also produce secondary power for industrial uses and for irrigation pumping. Power revenues will pay off the cost of the project in 50 years, with interest at 2½%.

Heyburn Dam, Oklahoma completion date set

Heyburn Dam, multi-purpose project 12 miles west of Sapulpa, is scheduled for completion this month, according to the Tulsa district office of the Corps of Engineers.

Located on Polecat Creek, the rolled-earth fill structure will create a lake with about 40 miles of shoreline. Roads into the area, and basic facilities for outdoor sports, will be set up.

Primary purpose of the dam is control of floods, which have occurred in the area about three times every two years. Studies indicate the Heyburn project and channel improvements would have eliminated 48 floods in Sapulpa during the last 40 years.

The reservoir was designed to provide for sedimentation reserve, recreation, fish and wildlife propagation, future supplemental water supplies and other conservation uses.

The dam will have a crest length of 2,920 ft and an average height of 67 ft above the valley floor.

Northeast resources survey ordered

President Truman has ordered six federal agencies to proceed with the comprehensive New England and New York resources survey that the Eighty-First Congress has declined to authorize.

Various bills were introduced in the past two years to authorize the survey, but Congress approved only a limited study by the Corps of Engineers in the rivers and harbors and flood control authorization act. Taking note of this, the President named the Department of the Army as chairman of a temporary interagency committee to make the survey. Other agencies on the committee are the departments of Interior, Agriculture and Commerce, the Federal Power Commission and the Federal Security Agency.

• States also to participate—The President also wrote to the governors of the six New England states and New York, asking them to name official representatives to work with the federal interagency group.

Presidential letter calling for the survey came this month, after a group of Democratic congressmen from the region had urged the President to act without further congressional action.

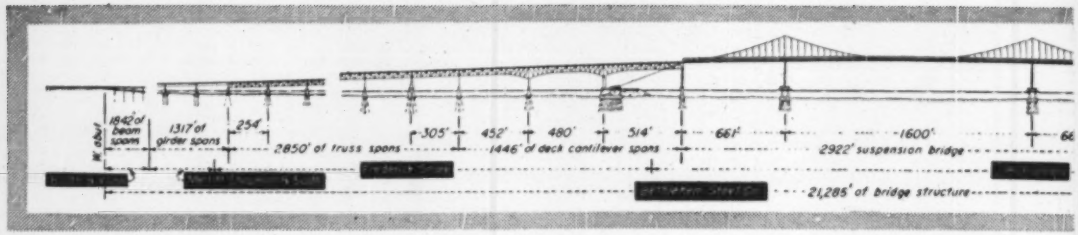
The committee's job, as set forth by the President, will be, "initiating a comprehensive survey of the resources of this region, and preparing recommendations for the development, utilization and conservation of those resources."

Heading the list of resources to be covered by the study was electric power generation and transmission.

"It is my desire that the survey be undertaken as soon as practicable and that the joint report be submitted for my consideration not later than July 1, 1952," the President wrote.

Redevelopment of Niagara Falls power and the St. Lawrence seaway and power project "should be started as soon as possible" without being delayed by the new study, Truman declared.

Only other project getting specific mention was power development of Passamaquoddy Bay, but the President did not endorse it. He merely noted that the committee should consult the State Department about international aspects of Quoddy in giving it consideration.



Six contractors tackle first bridge over Chesapeake

FOR SHEER MAGNITUDE and extent of marine construction operations, there will be a long wait before the equal appears of the job now under way to build the first bridge across Chesapeake Bay.

The floating equipment—cranes, pile drivers, barges, tugs and small craft—resembles nothing so much as an invasion fleet rendezvous like that most recently witnessed off Inchon, Korea.

Strung out for four miles between Sandy Point and Kent Island, Maryland, there is perhaps $8 million worth of equipment operated by the three marine contractors—Merritt-Chapman & Scott Corp., Frederick Snare Corp., and J. Rich Steers Inc. In addition there is a barge-mounted 90-ft-high derrick tower of the Bethlehem Steel Co., forerunner of the superstructure erection fleet that will be in operation all through next summer. And on the west and east approaches respectively is the land equipment of Booth & Flinn Co., and the marine equipment of Baltimore Contractors, Inc.

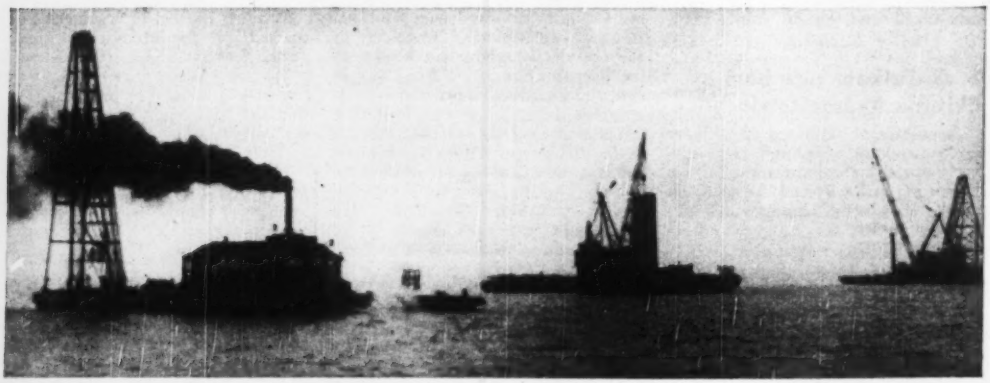
All in all there is about a dollar's worth of equipment for every two dollar's worth of substructure contracts—which total approximately $18 million, including nearly $3 million for steel H-piling and foundation caissons bought by the Maryland State Roads Commission, the bridge owner.

• **Many bridges in one**—The structure that calls forth such a marshalling of the construction industry's facilities amply justifies its demands. It is 21,286 ft long, end to end of steel, and will cost some $41,000,000—supplied by toll revenue bonds. It contains a 1,600-ft span suspension bridge with a vertical clearance of 186.5 ft and a 780 ft span through-cantilever bridge. In addition there are a dozen deck cantilevers of 450 to 600 ft span, 6 deck truss spans of 305 ft and 4 of 255 ft, plus 95 deck girder and beam spans. The roadway provided is two lanes, 28 ft wide. In this flat marshy country the bridge will be a landmark visible for many miles.

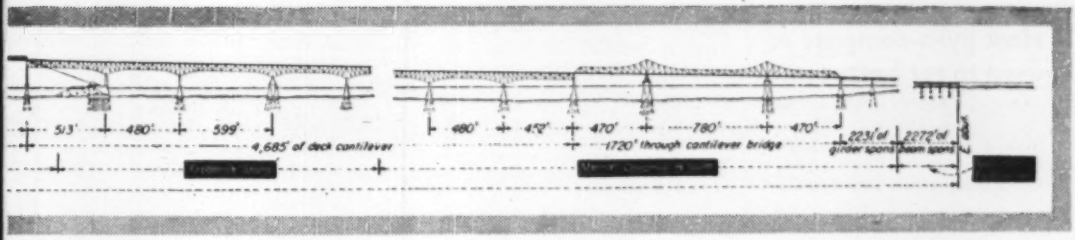
• **Unusual design**—Beyond mere size however, the bridge that the consulting engineer—J. E. Greiner Co., of Baltimore—has produced is a notable example of the designer's art. Particularly is this true of the foundations in which 17,500 tons of steel H-piles are required—half as much steel as in the four-mile long superstructure. It has been foundation cost as much as any other one thing that has deterred the building of a bridge across the bay for the fifty years since one has been talked about. And the Greiner engineers came up with a design that brought this cost down to the minimum possible.

For the 28 heavily loaded deep-water piers in the center of the bridge (all except the suspension span anchorages) this design is of the type developed by Herschel H. Allen, senior partner in the firm, for the Potomac River Bridge at Dahlgren, Va. (ENR Feb. 29, 1940, vol. p. 306).

Basic element of the design is a permanent steel form of four bell-bottom legs (smaller units have two legs) joined by double steel diaphragms. Familiarly called a "can", it is lowered onto a laminated timber platform supported at the bay bottom on timber or pipe piles and through which project steel H-piles driven as much as 135 ft to firm sand for a bearing of 130 tons per pile. The cans are filled with concrete to



FREQUENTLY FOG-ENSHROUDED, bridge site, with a huge fleet of construction craft strung out over its 4-mile length, looks like the assembly area for an invasion fleet.



form the piers. This is done with tremie concrete up to El. −8 after which the cans are pumped out and the piers completed in the dry.

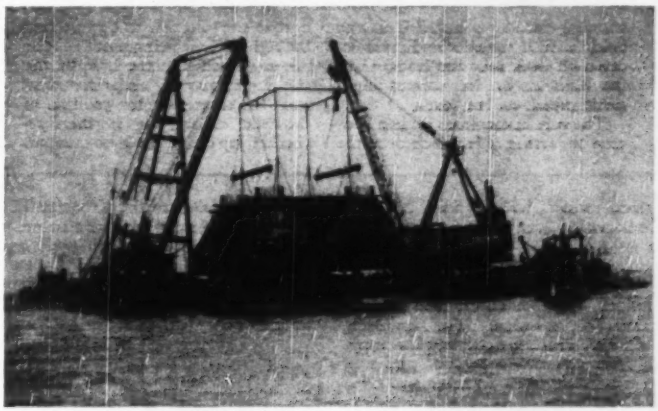
While the timber platforms provide support for the steel forms, they are equally essential as a template to guide the driving of the steel H-piles. Metal-sheeted holes are provided in the platform for each vertical and batter pile, and distinctive numerals—made of strips of wood so the divers can identify them by feel—mark each pile location. The most careful setting of these piles is required—even to the use of a gyro-compass to set the driver leads to the exact inclination for each batter pile.

For locations where the depth to firm bearing is so great as to make the cost of cofferdams prohibitive—as at the Potomac River and Chesapeake sites—the steel H-pile and "can" design offers a practicable solution. Because it can be carried out on a sort of a mass production basis it is faster than would be the use of steel sheet-pile cofferdams—and probably cheaper. Cofferdams are, of course, required for the suspension bridge anchorages of the Chesapeake project since these are in the form of huge monolithic blocks of concrete for which the "cans" are not suitable. The steel H-piles are necessary under the anchorages, however—as at all of the 124 foundations of the bridge. The huge total of 600 piles is required at each anchorage.

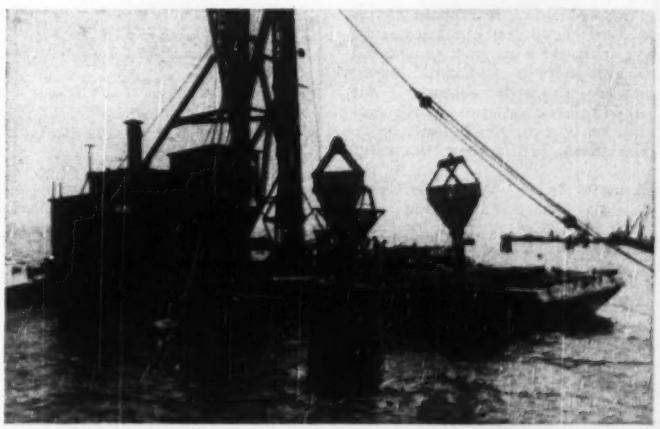
• **Foundation facts**—All piles on the project are driven into a sand layer that begins about 25 ft under the bay bottom except in the vicinity of the through-cantilever span where it is overlaid by 170 ft of mud and water. Here, in order to provide extra lateral strength, the piles are 14-in 89-lb sections with reinforcing plates welded between the flanges. Elsewhere 14-in 102-lb sections, unreinforced, are used. The longest pile is 135 ft.

To drive these piles until their tops are under as much as 60 ft of water requires some of the heaviest pile hammers in existence. One of these is the S-14, a 16-ton giant with a 7-ton ram, developed by the McKiernan-Terry Co. for the Dahlgren job some 10 years ago (ENR July 13, 1939, p. 5).

As a matter of fact, most of the methods used on the Chesapeake Bay job are adapted from those pioneered on the Dahlgren foundations, which were built by Merritt-Chapman & Scott. An exception is that the largest of the Dahlgren "cans" were prefabricated complete, floated in under compressed air buoyancy and sunk by releasing the air. In contrast, those at Chesapeake were lowered in three or four sections, which were bolted to-



CRANES of 175-ton combined capacity get ready to lower bottom section of one of the four-leg steel forms on to the sunken platform.



TREMIE PIPES are installed in each of the four legs of the forms through which concrete up to El-8 will be placed.

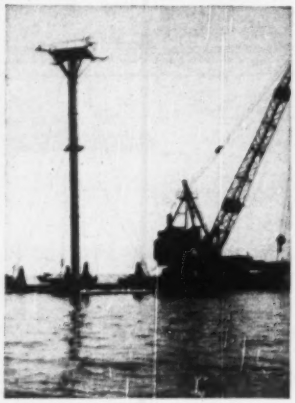
How gyro-compass is used to set batter piles

A gyro-compass is not an ordinary construction item, but one is being used by Merritt-Chapman & Scott to check the inclination of the batter piles on the Chesapeake Bay bridge. Here's how:

When the floating timber mat is lowered to the bottom, the target tower (first picture) projects out of the water. The setup is then ready to drive the steel H-piles through the holes in the timber mat shown in the picture at the far right.

From a survey platform 200 ft south of the bridge centerline, an instrument man gives approximate line and distance to the leads on the floating pile driver. The pile driver is then rotated by use of the gyro-compass (which is installed in the hold, with a repeater indicator located on deck near the leads) until the leads are on the correct alignment shown on the plans.

The pile in the leads is then lowered to within a few inches of the



top of the timber mat. . . . a diver checks the numerals on the mat next to the pile hole to be sure that the right hole is being used. . . . the pile is guided into the hole by the pile driver, moving on instructions from the diver. . . . the position of the pile driving rig is then rechecked by use of the gyro-compass

as well as by the instrument on the survey platform.

Then with everything properly set, the leads are lowered and pile driving begins.

gether under water. The heaviest Chesapeake "can" weighs 400 tons. It is 40 ft c to c of legs in one direction and 53 ft 4 in. in the other.

Last week, after about a year's operations, the whole job was almost exactly on schedule. The approach piers were virtually complete and work at every can and cofferdam pier was in some stage from pikedriving to concreting. In the west anchorage cofferdam nearly all of the 600 steel piles were driven, while work at the east anchorage centered on installation of the cofferdam.

As stated earlier, Bethlehem was engaged in the initial preparations for steel erection. This part of the job will also have its spectacular aspects since the plan is to preassemble and float in the anchor spans for the deck cantilever section which must be installed about 100 ft above the water.

• **A useful facility**—When the Chesapeake Bay Bridge is opened in 1952 it will be a great boon to local residents and through travelers alike. For the latter, the bridge will supply one of the missing links in a fast north-south highway that is rapidly taking shape, as the bottleneck ferries are replaced by bridges. Coming down through New Jersey on the turnpike that is now under construction, the traveler will be able to cross the Delaware River on the new bridge at Wilmington, continue south on the Del-Mar-Va (Delaware, Maryland and Virginia) peninsula to the Chesapeake Bay bridge and thus bypass Baltimore. Beyond is Route 301 which bypasses Washington and crosses the Potomac at Dahlgren. There the traveler may turn to Route 17 which will carry him across the York River on the new bridge now under construction at Yorktown. The existing bridge at Newport News gets him across the James River.

CHESAPEAKE BAY BRIDGE in conjunction with new bridges over the Delaware and York rivers will provide East Coast with a fast north-south route free of ferrys. It also furnishes a Baltimore bypass and the first direct connection between Maryland's east and west shores.

• **Local use**—When it comes to weighing the advantages of the new bridge to the local residents, one must differentiate between the "mainlanders," including Baltimoreans, and those on the east shore who populate Maryland's part of the Del-Mar-Va peninsula. As the map shows, Chesapeake Bay cuts Maryland in two. Residents of the east shore have professed to like their isolation and fear the great influx of "foreigners" that the new bridge will bring. The mainlanders on the other hand, attracted by the Atlantic beaches of Del-Mar-Va, have long desired easier travel than was afforded either by the Sandy Point ferry or by driving clear around the north end of the bay.

There is also more than a probability that residents of the eastern shore may not be as isolationist as they publicly proclaim when they see how the new bridge helps in marketing the products of their lush food basket.

In any event the half-dozen contractors who have pooled their talents for the job are not primarily concerned with its economic consequences. They are too busy translating a notable engineering plan into reality—too occupied in meeting a date in 1952 when Chesapeake Bay will be bridged for the first time.

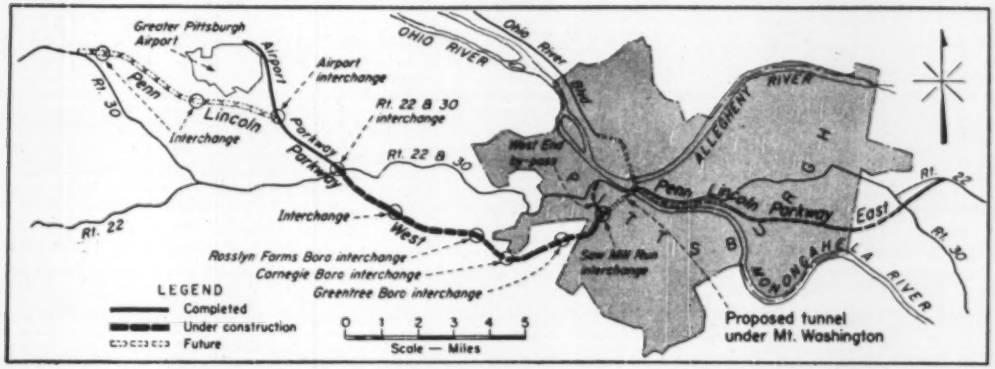


Fig. 1. THE PENN-LINCOLN PARKWAY WEST is designed for fast movement of highway traffic through rugged country.

Work starts on west section of expressway for Pittsburgh

John R. Dietz
Chief Engineer, Highway Division
Gannett Fleming Corddry & Carpenter, Inc.
Harrisburg, Pa.

Construction of a major traffic artery westward from Pittsburgh—the Penn-Lincoln Parkway West—began late in July.

It will provide badly needed relief for traffic moving to or from the city over the tortuous route now followed by U. S. Highways 22 and 30. Together with the Penn-Lincoln Parkway East, much of which is under construction or is completed, traffic will be able to move freely from either the east or west right into the heart of the city—to the famed Golden Triangle at the junction of the Allegheny and Monongahela rivers.

Routes 22 and 30 now traverse congested areas in the West End of Pittsburgh. Bad alignment, 12% grades, a great number of traffic lights, and overcrowded conditions all combine to cause traffic slowups. These conditions will be aggravated when the eastern section of the parkway begins to discharge an accelerated and augmented traffic load onto the present inadequate facilities that were planned for a more leisurely age.

In addition, the completion in the near future of the new Greater Pittsburgh Airport along the route of the western section of the parkway will induce a new traffic problem in the form of 10,000 vehicles a day, most of which will be fast traveling passenger and mail cars.

• **67,000 vehicles a day**—Traffic engineers estimate that by 1960 there will be a volume of 67,000 vehicles per day across the double-deck bridge over the Monongahela River that is proposed to replace the present inadequate structure carrying routes 22 and 30. Out at the Greater Pittsburgh Airport interchange the traffic volume for the same period is expected to rise to 25,000 vehicles per day.

The general alignment of the Penn-Lincoln Parkways in relation to Routes 22 and 30 is shown in Fig. 1. These routes converge about 11 miles west of the city and follow a common route to a point just east of the city's easterly boundary. Because of the rough terrain in the Pittsburgh district, it is not easy for motorists to find or follow alternate routes either through or around the city, hence most traffic follows the marked routes.

The Penn-Lincoln Parkways are not "parkways" as that term is generally understood in highway circles. They are controlled-access highways open to all types of vehicles. All crossings are to be separated and entrance or exit will be possible only at the interchanges.

• **Design features**—On the western section the controlling grade will consist of about 7,000 ft at 5%, which will be between the Saw Mill Run and Greentree interchanges. Extra climbing lanes for truck traffic are to be provided on the steeper grades, amounting in all to about six miles. There will be no curves sharper than 5 deg, and all curves in excess of 2 deg will have transitions.

The general type of construction contemplated is shown in Fig. 2. Where the right-of-way and construction costs will permit, the separation between opposing roadways is to be increased over that shown in the drawing from 4 ft to 20 ft or greater, and the raised concrete reflecting divisor is to be replaced by a concave earth divisor. The latter type of construction will prevail on about 35% of the Parkway West.

• **Bridges**—The hilly terrain, characteristic of this section of Western Pennsylvania, has made necessary the provision of numerous structures to carry the road over deep ravines and valleys. There are 12 highway bridges, two railroad bridges, and several costly drainage structures in the 4-mile distance between Saw Mill Run and Carnegie. At least five of the highway and one of the railroad bridges are multiple-span steel viaducts varying in length from 300 ft to 700 ft or more.

In general, the most economical type of structure was chosen for each specific location. These structures were standardized only to the extent of providing the same type of parapet along the parkway. The design includes various types of structures—continuous I-beam; simple and continuous through and deck-plate girder; and reinforced concrete T-beam, arches, and slabs on the smaller spans. A steel arch was designed for crossing Campbells Run Valley, immediately west of Rosslyn Farms Borough.

All bridges are designed so that a lighting system can be installed at a later date. Conduits and junction

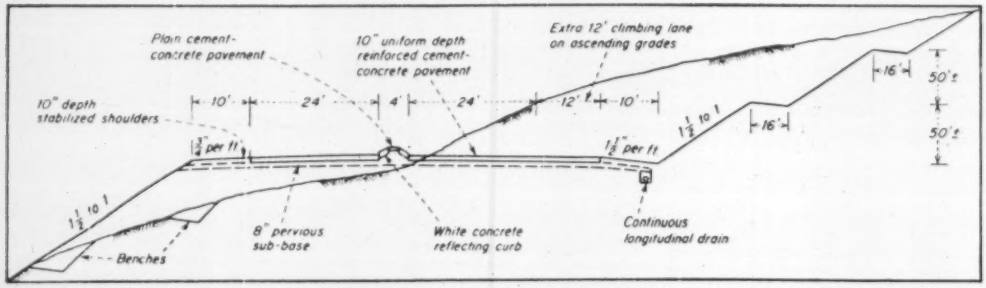


Fig. 2. HIGHWAY CROSS-SECTION to be used in areas where right-of-way and construction costs are high. In other areas the opposing lanes will be separated by median zones up to 20 ft wide. The presence of material of questionable character dictated the extensive benching shown here to insure against slides in cuts or fills.

boxes are provided for conductors, and the parapet is designed for the future installation of lighting standards.

The rough nature of the topography has also resulted in heavy grading quantities. For example, at the Carnegie Interchange where three separate viaducts (each over 600 ft long) will carry the roadway over railroads and streams, approximately 750,000 cu yd of excavation will be required. The construction of this interchange will also require the demolition of 52 houses. Excavation quantities from Saw Mill Run Boulevard to Rosslyn Farms, a distance of 4.6 miles, total 3,400,000 cu yd, or an average of 740,000 cu yd per mile.

• **Saw Mill Run interchange**—This interchange is complicated by the many natural and artificial features of the topography which limited its design. It is to be located at the junction of the valleys of Saw Mill Run and Little Saw Mill Run, both of which have narrow, flat bottoms with fairly steep sides rising to a height of over 300 ft above their floors. Two structures of the Pittsburgh & West Virginia Ry. cross Little Saw Mill Run, one 35 ft above the stream and the other 95 ft above the valley floor. The valley of Little Saw Mill Run also is occupied by Banksville Road, a comparatively new 4-lane divided highway which passes beneath both railroad structures.

As Saw Mill Run has a drainage area of 15 sq mi, an open channel for it was indicated as a design requiring that it be carried in a closed conduit proved to be costly.

The main valley of Saw Mill Run is occupied by several streets and by a modern boulevard, which is a large traffic artery serving the suburban South Hills district of Pittsburgh. The presence of many industrial and residential structures in both valleys adds to the complexity of the problem.

Early studies gave consideration to carrying the parkway over this area on a high level viaduct. This scheme had many advantages, such as shortening the length of the tunnel required under Mt. Washington; reducing the long 5% grade up to Greentree Borough; shortening the line; and reducing overall costs. However, it was found impossible to make satisfactory ramp connections from the high level structure to Saw Mill Run Boulevard —a vertical distance of 100 ft—and since traffic studies indicated that a turning movement of 24,750 vehicles per day could be expected from the parkway to the boulevard and Banksville Road, the high level scheme was abandoned.

Other studies were made in which the parkway was placed above the low-level and beneath the high-level railroad structures. But since this required locating the highway about 65 ft above the valley floor, and still resulted in long and costly connecting ramps to Saw Mill Run Boulevard, that location was abandoned and a location at ground level was adopted. It requires entire rebuilding of the low level railway structure and changes in the high one, but is considered to be the most practicable and economical solution to the problem.

• **West End By-Pass**—Because the tunnel under Mt. Washington to connect the parkway with the proposed bridge over the Monongahela River is not to be built at this time, a connection to the present Routes 22 and 30 where they intersect the highway along the river is now being built as a separate undertaking of the Pennsylvania Department of Highways. It is known as the West End By-Pass.

• **The coal problem**—Of special interest on a highway of this type in Western Pennsylvania is the problem created by coal mines and coal beds. The coal outcrop line must be crossed when roads climb from valley bottoms over the hills. Old mine workings must be located, and where crossed by the highway they must be excavated and backfilled to provide adequate support for the new road.

Consideration must also be given to proper protection against the hazard of mine fires. In some cases this will dictate the necessity of removing coal that would otherwise be left in place. Any coal not excavated or previously mined is usually reserved by the Department of Highways and left in place for support.

At one location east of the Borough of Carnegie it will be necessary to excavate 120,000 cu yd of overburden and remove old coal pillars in order to provide an adequate foundation for the parkway. There is also a serious drainage problem here, as the drainage from approximately 900 acres of underground mine workings was found to be discharging into an existing stream within a few feet of the parkway center line at a point where a 90-ft embankment is required.

The total estimated cost, including property damage, of that portion of the parkway west of the portal of the tunnel under Mt. Washington at the Saw Mill Run Interchange, and excluding the connection to the Greater Pittsburgh Airport, is estimated at $17,000,000. The project is being financed by the General State Authority of Pennsylvania.

The section from Saw Mill Run Interchange to the Airport Parkway will be placed under construction this year. It is estimated that it will take two years to complete this portion.

Preliminary studies and the final design were done for the Pennsylvania Department of Highways by Gannett Fleming Corddry & Carpenter, Inc., consulting engineers of Harrisburg, under the supervision of the author.

Previous data on this project were published in the following issues of ENR: Oct. 30, 1947, p 608; Aug. 12, 1948, p 10; Oct. 21, 1948, p 4; and May 12, 1949, p 72.

BAY CITY - the biggest value in ¾ yard machines .... easily convertible

Quick convertibility without machinery change is a feature that gives you more for your equipment dollar when you buy BAY CITY. Then too, you get ruggedness, dependability and long life that can't be matched.

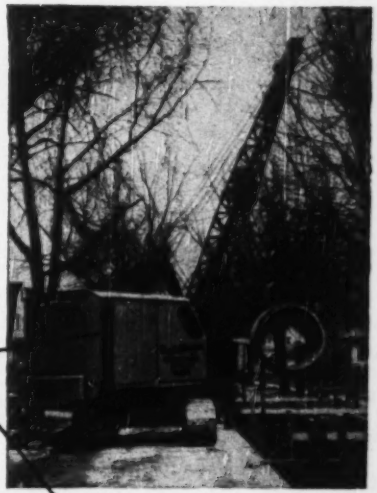
Well balanced for Crane Work.

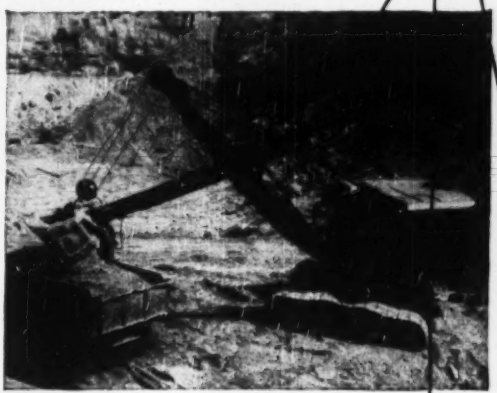
Stability for low boom operations.

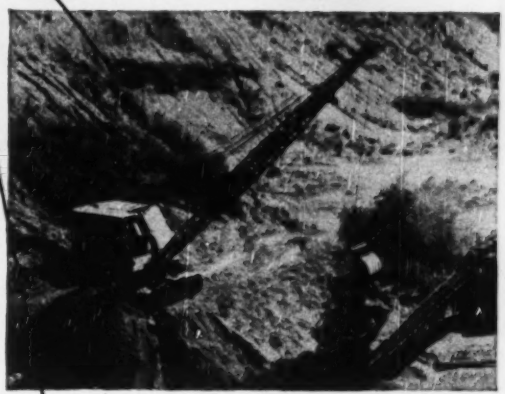
Easy operation for hard digging.

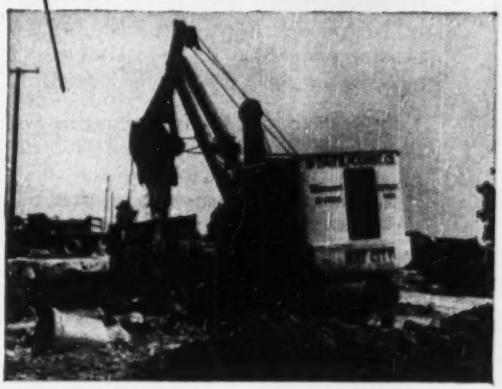
High line speeds for faster material handling.

Power for fast digging cycle.









BAY CITY

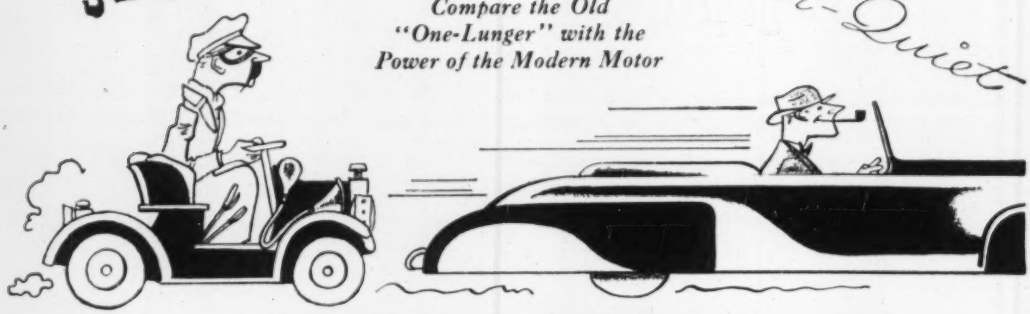
BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

Yesterday--
JERK ! BANG!

Today--
Smooth-Quiet

Compare the Old "One-Lunger" with the Power of the Modern Motor



...so ROCKMASTER "16" compares with old blasting methods

In the ROCKMASTER "16" Blasting System, pioneered by Atlas, sixteen milli-second delay electric detonators, all starting together, fire at controlled split-second intervals over a period of only a little over a half-second.

Talk to any experienced blaster who has compared ROCKMASTER split-second blasting methods with ordinary instantaneous or delay-action blasting. He'll tell you why it's like comparing a modern multi-cylinder automobile with an old-time one- or two-cylinder model! ROCKMASTER blasting gives a smooth flow of blasting power that means control over throw and breakage never before possible—*with far less noise and vibration!*

Your job may call for two, three, or even all sixteen ROCKMASTER detonators. We help you select them to fit a particular job in quarry, strip pit, mine, construction . . . on the surface or underground. Drill pattern is adjusted to fit the system, often with substantial savings in drilling and dynamite.

Write for your copy of booklet on the ROCKMASTER "16" Blasting System. It includes diagrams for typical loading in quarries, strip pits, mines and many types of construction.

Less Bark *More Bite*

ROCKMASTER "16" TIMINGS

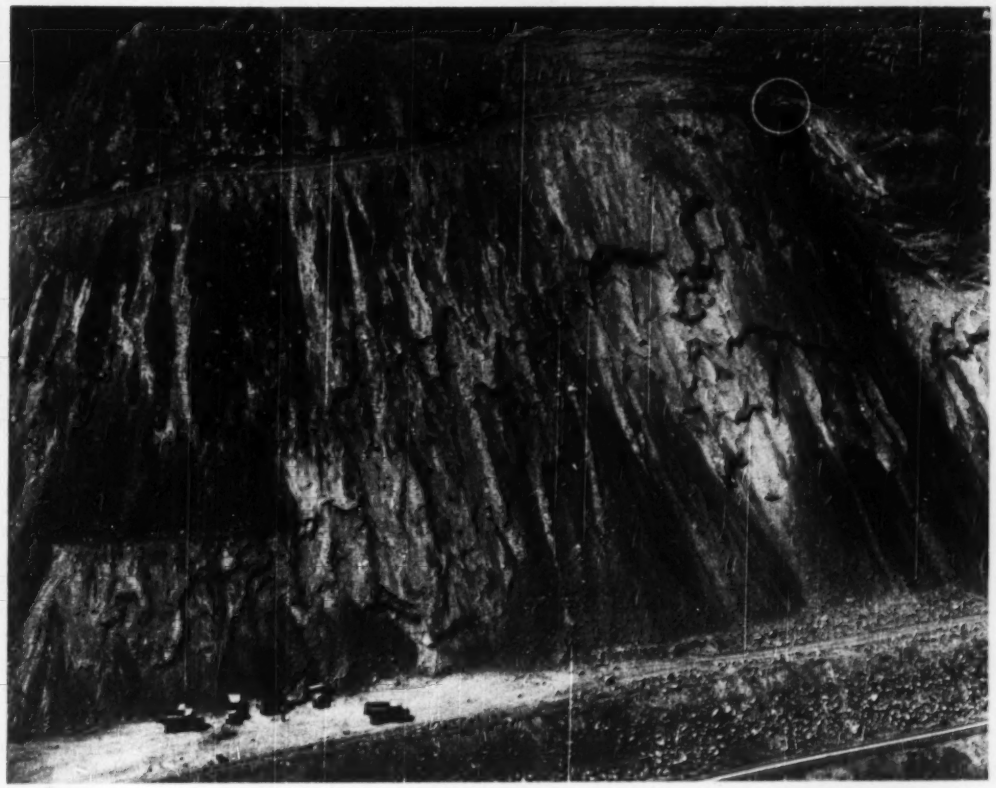
Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

ROCKMASTER: Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES
"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*



HIGH TALUS SLOPES are dressed back on a McNary Dam railroad relocation by a bulldozer (circle) working on a narrow ledge. Excess material is removed by shovel and truck.

Light material and 600-ft-high talus slopes make tough going in . . .

Moving roads and rails for McNary Dam

RELOCATION WORK in the McNary Dam reservoir area will use up $34,000,000 of the Corps of Engineers' appropriation for this great Columbia River project. Included are 84 miles of new railroad alignment, 55 miles of new highway and the raising, altering or rebuilding of five major bridges. The work is complicated by peculiar terrain including talus slopes (of basalt fragments) as high as 600 ft. Among the materials encountered is volcanic ash weighing as little as 65 lb per cu ft that further complicates the railroad fill work.

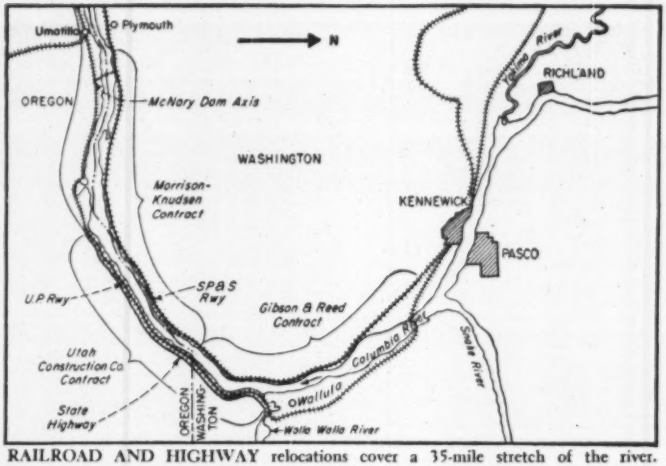
McNary Dam is located at the foot of Umatilla Rapids about 180 river miles east of Portland, Ore. Its reservoir extends 40 miles up to Pasco and Richland, Wash., through the Wallula Gap or Gateway. Here the river ceases meandering through the rolling eastern Washington country and pierces a high plateau land of volcanic

PRINCIPAL McNARY DAM RELOCATION CONTRACTS

Contractor	Relocation of	Where	Length (mi)	Contract Amount	Excavation (1,000 cu yd)	Embankment (1,000 cu yd)
Utah Construction Co.	Union Pacific; State highway in Oregon and Washington	South shore	11.4; 11.1	$3,070,709	3,625	3,900
Morrison-Knudsen Co., Inc.	SP&S	North shore	17.8	$3,275,224	3,700	3,140
Gibbons & Reed Co.	SP&S	North shore	11.7	$1,548,601	1,800	2,490
	TOTALS		52.0	$7,894,534	9,125	9,530

origin that rises 1,000 ft above river level. The Columbia—second largest United States river system—then continues almost on a direct line to Portland and to the Pacific.

Ever since the days of the Lewis and Clark expedition and the old Oregon Trail, main traffic arteries have followed the river. Thus there are railroads on both banks and a major highway on one. All three are set on narrow shelves at the base of high bluffs.



RAILROAD AND HIGHWAY relocations cover a 35-mile stretch of the river. There are 84 miles of rail and 55 miles of highway to be relocated.

• **Three big contracts**—Currently under way are three major contracts (see table) involving 10,000,000 cu yd of earth and rock excavation and including the most difficult portion of the relocation work. These contracts are scheduled for completion next spring.

Diversion at McNary this October will raise the river level 18 ft at the dam for low water flows—and considerably more for flood flows. This won't affect the railroad and highway routes during the normal low winter flows, but when the late spring floods come in 1951, some of the existing alignment is likely to be inundated. Completion of the dam in 1953 will raise river level almost 100 ft—thus final ballasting and track laying must be done before spring floods in 1951. Other relocation work (such as the major bridge alterations) need not be done until 1953.

All three of the current contracts include work on high talus slopes, the most difficult being that on the Gibbons & Reed contract on relocation of the Spokane, Portland and Seattle Railroad—a connecting line providing freight and passenger service to those three cities. This job is complicated by the limited working space at the toe of the extremely high slopes—up to 600 ft.

• **Ticklish bulldozer work**—The relocated railroad is being placed on a man-made bench located higher than the existing alignment. This means that the talus slopes have to be dressed back as much as 25 or 30 ft. Because of the risk of falling rock and the lack of working space, it is impossible to undertake this dressing from the bottom of the slopes.

For these reasons each of the contractors had bulldozers build roads up the sides, or in some instances blaze a trail down from a canyon or gully cutting into the top of the bluff. These 'dozers worked along a berm at the very top, pushing material over the edge for removal by power shovel and trucks at the bottom.

The talus slopes were allowed to reach their natural angle of repose, usually about 1¼:1. But in the process, rocks high on the slope occasionally broke loose and started an avalanche that was dangerous to those working below as well as to the existing rail line. Such slides started even without the help of a bulldozer.

To add to the complications, mainline trains between Portland and Spokane continued to operate over this line all during the construction period and great care was taken to be sure the tracks were clear. Even so, some minor accidents occurred.

• **Extra width at talus toe**—As a further safety factor, the talus slopes were brought down so that in addition to the normal ditch there was an 8-ft wide berm. Thus, if further sloughing occurs, material will first accumulate on this berm rather than on the highway or railroad. Should the sloughing become great enough, the berm provides room for working equipment to remove the excess material.

On the Oregon shore of the river (where more working space is available) the Utah Construction Co. has rigged a slack line cable operated from the winch of a tractor. The end of this cable is anchored in the bluff along a pilot road above the talus slope. The rig is equipped with a wide drag with spike teeth that gradually dresses the slope down. Here again, after excess material is accumulated at the toe, it is removed by shovel and truck. The cableway is moved by tractor to new anchors as needed, but in many instances the rig can work from one location for a day or more.

• **Saturated fills**—Second great problem in the McNary relocation work is providing railroad fills that will withstand saturation.

On much of the work this is relatively easy because of the rocky nature of the material. The basaltic rocks and sand compact easily and the resulting fill is not adversely affected by inundation. Project specifications require that only 45% of the material in the reservoir-side fills pass a ½-in. screen. This requirement is not hard to meet. Further restrictions are added if the fill material is not sharp and angular in nature. In such case, the limit is 20% passing a ½-in. screen.

But complications arise from significant amounts of very light weight volcanic ash or tuff encountered. This material weighs as little as 65 lb per cu ft and is almost microscopically fine. Optimum moisture content in some instances is as high as 46%—just a soupy mix.

Much study was devoted to the best methods for handling these light-weight materials. Possible solutions varied all the way from removing them completely to holding them with watertight imported material.

In the design stages (in 1948) Prof. Arthur Casagrande of Harvard was retained by the Corps of Engineers as a consultant on this problem. During early construction phases in 1950, Prof. Ralph B. Peck of the University of Illinois was retained to consider the work further.

The conclusion reached was to remove such light-weight materials completely, with certain minor exceptions. There being no clay materials available, construction of a watertight blanket was impossible. Further, the volcanic ash is so fine that should only a partially impervious blanket be constructed the material could be washed away almost as soon as it became saturated.

The intent was to remove such sub-

SLACK LINE CABLEWAY operated from a tractor winch dresses back a 300-ft high talus slope. Drag is 8 ft wide.

standard materials down to firm rock or good gravel and then fill with good material. As a limit on this removal, these silts and ashes were excavated down to El 288 (normal pool elevation will be El 340). On the Utah Construction Co. work, cuts of as deep as 60 and 80 ft were needed for this purpose.

A specialized solution was developed for materials lying below the natural water table. In such instances it would be difficult or impossible to remove them. This occurred on the Washington shore SP&S relocation work because much of that alignment wasn't reached by construction crews until after the spring floods had raised the water table considerably.

In such case, excavation was taken down to 3 ft above the water table level. Then additional materials were brought in, and a 50-ft wide fill was made on the river side. This berm acts as a stabilizer to hold the fill in place.

• **Temporary fill settled**—Action of this lightweight material was indicated by an experience with a temporary railroad fill built on the Union Pacific side of the river. This fill was constructed during low water, using available material which happened to include some volcanic ash. When saturated later it settled 6 to 8 ft.

All of the fills in the reservoir area are covered on the river side with a 3-ft thick rock blanket from the top to well below normal reservoir level (El 340). This rock is laid on a 1½:1 slope to El 335 and on a 1:1 slope to El 324; then it is discontinued.

• **Highway fills not so bad**—These special precautions are not required on the highway fills that lie toward the bluff from the railroad fill since they are not subject to saturation.

Here, where the material is largely rock, heavy tractors working the fill surface give adequate compaction. Where other materials are involved compaction is accomplished by sprinklers and rubber-tired rollers with four passes required. This results in about 90% of modified Proctor density.

There is much rock excavation on all three of the major contracts. Perhaps the largest single cut is one 10,000 ft long with depth up to 178 ft being undertaken by Morrison-Knudsen on the SP&S relocation. In this instance, wagon drills working on the surface drill 24-ft holes and a depth of some 20 ft is blasted off for truck and shovel removal. Several such passes will bring the rock down to grade.

Gibbons & Reed are using an elevating loader in extremely rocky ground. One would expect that the material would cut the rubber conveyor belting but the contractor is having relatively little difficulty.

• **Special culverts**—The two future river level stages complicate culvert design. After October of this year the river will be at diversion stage. On completion of the dam the river level will be 80 ft higher. To accommodate run-off between diversion and completion, a set of low culverts is being built. For run-off after completion of the dam where the river level will be significantly higher, another set of higher culverts is required. Biggest is 60-in. dia and 262 ft long.

• **Highway detour required**—Due to limited working space, the state highway on the south bank of the river was completely closed to public travel on March 1 of this year. It is hoped that it will be open again early next year.

On all of the relocation work, the Corps of Engineers must meet the standards of the highway departments or railroads involved. Most difficult to meet is the requirement of the SP&S that minimum grade be 0.2 percent. This line has taken great pride in its water level, no-grade route, and insists that this limitation be maintained. Rail weight is being increased from 112 to 133 lb per yd.

Across the river, on the other hand, the Union Pacific Railroad is taking advantage of the relocation to make significant changes in its operation in this area. The main line between Portland and Omaha leaves the Columbia River just below McNary Dam and heads for Pendleton, Ore. The line that is being relocated extends from Messner, Ore., to Spokane, Wash. It presently includes extensive freight yards at Wallula that are being inundated by the reservoir.

Rather than rebuild these facilities near Wallula, the Union Pacific chose to move the freight yards to Hinkle, a station on its main line some 50 miles away. Accordingly, the Union Pacific is building the new line from Hinkle to Sand, a point on the Columbia River in the McNary reservoir area. The Corps of Engineers is constructing the relocated Spokane branch from there on up the river.

Track laying, final ballasting, and highway surfacing is being undertaken by the individual highway departments and railroads with government money.

• **Personnel**—Project managers for the various major contractors on this work are: For Morrison-Knudsen—Al Johnson; for Gibbons & Reed—A. V. Toolson; and for Utah Construction Co.—E. R. Steeples.

The work is a project of the Corps of Engineers, Walla Walla District, and was initiated while Colonel William Whipple was district engineer. It is being carried on under the general supervision of Colonel Wm. H. Mills, recently appointed district engineer. R. R. Garnett is chief of the McNary reservoir relocation section of the construction division in the Walla Walla district. George J. Schoch is resident engineer on the north shore, Joseph F. Skidmore on the south.

Earlier ENR Articles on McNary Dam:

Highest Lift Lock (Sept. 30, 1948, p. 56)

Step-Two Starts (Aug. 11, 1949, p. 26)

River Diversion Plan (June 29, 1950, p. 27)

Enter the consulting contractor

On a 20-story office building in Tulsa, Okla., he expedited construction and helped keep costs down.

CONSTRUCTION of the First National Building in Tulsa, Okla., was unusual in two respects:

(1) A type of service unique in the construction industry was furnished by John W. Harris Associates, Inc., New York City contractor, during erection.

(2) The building contains some novel design features: It is 20 stories high, and a large portion of the ground floor is open to the street. It is fully air conditioned. And it is heated by natural gas with boilers on the 20th floor.

Working under a supervisory construction-management contract, the Harris organization served as owners' representative, while a local contractor, Manhattan Construction Co., of Muskogee, Okla., performed the construction services usually provided by a general contractor under a cost-plus-fixed-fee contract. Both the owners and the architect—Carson & Lundin, of New York City—were pleased with the way this unique arrangement worked out.

Harris' consulting advice was used both before and during construction. Here's how:

1. Budget preparation—At the outset, the Harris organization worked with the architect, the general contractor and the owner to establish the type and size of building that could be erected with the money available. Throughout the preliminary planning stage, Harris made cost estimates of each of the schemes considered. This procedure assured a design that met space and budget requirements.

2. Purchase of equipment—Harris' knowledge of the building materials and equipment market enabled purchase of structural steel, elevators, moving stairs, air conditioning and other major items. In some cases, items were bought before the award of the general contract. This not only assured delivery at the time required, but also saved the owner money due to the purchasing ability of an organization with national buying power.

3. Purchase orders—The consultant reviewed the purchase order issued by the contractor for every item of material.

4. Subcontract negotiation—Though subcontracts were let by the general contractor, Harris' engineering department made its own estimate of the cost of each trade, and these data were used in the negotiation of subcontracts. Claims for extras likewise were reviewed by the consultant prior to payment by the owner.

5. General supervision—Coordination of the various phases of the work and liaison between owner, architect, engineers and general contractor on the job was another important function. Also, planning and scheduling were directed by the consultant.

6. Inspection—Harris construction supervisors cooperating with the general contractor's superintendents, made periodic inspections to certify that the owner's interests were being fully upheld throughout the job.

SKYSCRAPER ON STILTS—The 20-story First National Building in Tulsa, Okla., gives that impression because of exposed first tier columns.

• **Natural lighting wanted**—Including the bank interiors, the building cost about $6,000,000. It contains 3,250,000 cu ft and provides a net rental area of 163,000 sq ft.

At ground level, the structure is rectangular in plan, occupying in full its 100x140-ft lot, with one long side adjoining existing buildings. From the sixth floor up, the structure is L-shaped: the architect omitted a rectangular area from one corner of the lower-floor plans to get more daylight. In this way, without resorting to interior courts, he was able to eliminate dark, undesirable space deep inside the building.

To get a maximum of natural light for the offices, the architect placed toilets, stairs and elevators against the blank rear-wall property line. There

are six passenger elevators (one of which serves only the bank) and one freight elevator.

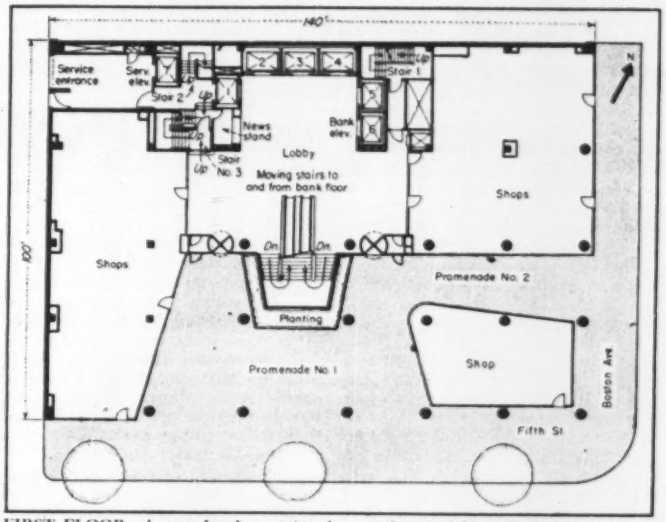
Strips of continuous steel windows extend around the open sides of the building. Between them are horizontal bands of grayish, slightly glazed brick, which terminate at vertical borders of white marble.

Specially designed, the windows are three units high. Top and bottom panes are fixed; the center is an architectural-projected type, so that the entire window can be washed from the interior. Since the building is air-conditioned, the windows are not needed for ventilation.

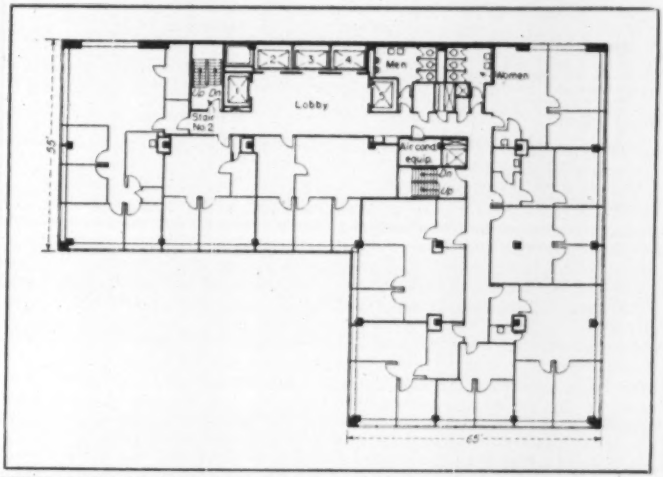
To counteract the hot afternoon sun, heat-absorbing glass was installed in the windows on the westerly side. In addition, all windows were equipped with venetian blinds.

Floors consist of light-gage, cellular steel decking topped with pumicite concrete fill. Ceilings were furred from the underside of the decking, and fluorescent fixtures were flush.

The building has a structural steel frame, with columns spaced 20 to 25 ft apart. Except for the few that terminate at the six-floor setback, the columns extend from the sub-basement to the main roof or the penthouse roof.



FIRST FLOOR, glass enclosed, contains shops and main lobby. Bank occupies basement and second to fifth floors, reached by electric stairs and elevators.



TYPICAL FLOOR PLAN for areas above the fifth floor. Stairs, elevators and toilets were placed against the blank rear wall to keep window area at maximum.

• **No walls**—At street level, except at the property lines, the perimeter is entirely enclosed in glass. The first floor is occupied by shops, the main lobby and a large arcade that is open to the street. The first-tier columns, which are encased in stainless steel, are plainly visible from the street, so that the structure appears to be standing on stilts.

Basement, second, third, fourth and fifth floors are occupied by the bank. The main banking space is on the second floor and is served by moving stairs and elevators.

Above the fifth floor, space is occupied by tenants. They are served by five passenger elevators of the gearless, self-leveling type. Automatically controlled by electronic devices, this equipment can operate at 800 fpm.

• **Hot-water heating**—The building is one of the few large office buildings heated entirely by hot water. Engineers called for concealed, convector-type radiation peripherally throughout the skin of the structure, with damper control of air flow across the convectors. This system assumes 45% of the heating load, the balance being made up by the air-conditioning system.

The hot-water system has a monoflow piping arrangement, which eliminated valves at the convectors. It also considerably simplified the piping and zone control layout.

The heat is supplied by two self-contained steam-generator type boilers, which are connected to a series of hot-water converters. Fired with natural gas, each boiler is rated at 200 boiler horsepower.

• **Roof-top boiler room**—These boilers, which weigh 37,000 lb each at normal water capacity, are located on the 20th floor, whereas the converters are in the sub-basement. Among the reasons for the roof-top location are:

1. A considerable amount of money was saved on the building foundations and the construction of the sub-basement floor slab.
2. Valuable rental area was acquired in the sub-basement.
3. A stack running the entire height of the building was eliminated.
4. If the boilers had been placed in the sub-basement, the heat of the boiler room would have been a major factor in the zone control of the air-conditioning system for the basement banking floor.
5. Need for an extensive supply and

exhaust ventilating system for the boiler room was eliminated.

The weight of the boilers made it desirable to land them on the 20th floor while the derricks of the steel erectors, the Bethlehem Steel Co., were still in service. They were hoisted into place before the concrete for the boiler-floor was deposited. Steel for the penthouse floor was then set and the boilers were suspended from these members until the boiler-room floor was cast.

The boilers were ready for test before the masonry walls of the boiler room had been completely finished. As a consequence, during the winter, there was danger of the condensate and the water in the monoflow system freezing. To prevent this, the systems were immediately drained when shutdowns occurred.

Also, since the boilers are located more than 250 ft above the converters (which are served by a 10-in. line from the boiler header) there was another danger in the possibility of violent priming and siphoning. Therefore, great care had to be taken in installing the piping and locating the header to prevent this.

• **Future prospects**—John W. Harris Associates foresee a trend toward greater use of the services of highly experienced general contractors as consultants, as for this building. Cases where such services may prove economical are:

1. Where it is highly desirable that local contractors be used, but these organizations do not have the requisite specialized experience on the over-all purchasing power for the type of structure to be erected.

2. Where an industrial organization needs the assistance of an experienced contractor in choosing between alternative designs and in making close comparative cost estimates.

Hamel-Gaynor Associates (now Gaynor & Albright, Dallas, Texas) were mechanical engineers; structural design was by Edwards & Hjorth.

Notes on legal decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill)

Damages caused by delays

A contract with the U. S. government for the installation of plumbing, heating and electrical equipment in a building being erected by the government provided for liquidated damages for delayed performance for failure to complete that part of the work at the same time that the principal contract was completed. The contract absolved the subcontractor from payment of liquidated damages for delays, if such delays resulted from various causes including acts of the government. The contract reserved to the government the right to make changes in the work which might interrupt its progress and even suspend any portion of the work if it deemed it necessary to do so.

The general contractor and the subcontractor were directed to proceed with the work. When the subcontractor's superintendent arrived on the job with the necessary tools and equipment with which to start the performance of the work, he was informed by the general contractor that because of the encountering of unsuitable subsoil conditions the government had stopped the performance of the work. The government deemed it necessary to change the site of the work and alter the specifications, so that the subcontractor was held up six months before he could start the work.

Because of the delay caused by it, (the government) pursuant to the adjustment clauses of the contract, the government extended the time of performance and adjusted the price to take care of the change in the cost of the work due to structural changes.

After the work was completed, the subcontractor was paid the full amount agreed upon for the work performed and brought the action to recover damages suffered by reason of the delays caused by the government. The Court of Claims allowed the subcontractor a recovery.[1] This judgment was reversed by the United States Supreme Court,[2] which held that the provisions of the contract providing for an extension of time in which to perform, in the event the contractor is delayed by the acts of the government, and for the waiver by the government of any claim for liquidated damages for the period of the extension, barred the subcontractor of any right to recover damages for the delays incurred.

(1) Rice & Cameron, etc., v United States, 95 Ct. Cl. 84.
(2) United States v Rice & Cameron, etc., 317 U.S. 61, 87 L. Ed. 53.

Architect's certificate

A provision of a contract to the effect that payments will be made in amounts determined by the architect and authorized by said certificate does not in terms or by fair implication make it the owner's duty to procure such certificate. The duty to obtain it is upon the contractor.[1]

(1) Halverson v Blue Mountain Prune Growers Co-op., 214 P 2d 986.

Compensation of engineers

An engineer entered into a contract with a municipality whereby he was to render certain services in connection with the preparation of plans and specifications and to render other engineering services in connection with the erection of a bridge. Payment for these services was to be made on the basis of 7½% of the "cost of the undertaking."

The contract for the bridge was let and after the contractor had performed about one third of the work, he abandoned the job and his surety employed another contractor to complete the work. The total sum paid to the original contractor plus what it cost to complete the work greatly exceeded the original contract price. No part of this excess cost was paid by the municipality.

The engineer brought an action to recover for his services on the basis of 7½% of the actual cost of the work. The court limited his recovery to 7½% of what it cost the city to do the work. The court indicated that as the engineer's contract was with the municipality, the term in the contract "cost of the undertaking," meant the cost to the city and not the cost to any third person not a party to the contract.[1]

(1) Pette et al. v City of Nashua, 50F. 2d 50.

Written orders for extras

A provision in a building contract that any change in the work shall be made only upon written orders and after the cost thereof has been agreed upon in writing, is subject to modification by the conduct of the parties.[1]

(1) Davis v Altose, 215 P. 2d 705, (Supreme Court of Washington, March 3, 1950).

Difficulty of performance

"Courts cannot set aside contracts because the performance of them becomes more difficult or more expensive than when they were entered into."[1]

(1) Westland Const. Co. v Chris Berg, Inc., 215P. 2d 682.

A SIGN OF *SPEED* on Road Jobs...

FLOWE BROS. CONSTRUCTION CO. AVERAGES 1000 YDS. IN 10 HOURS

LORAIN
Thew TL 25 Lorain
3/4 YARD

"It's the best shovel built" . . . that's the way W. O. Flowe of Flowe Bros. Construction Co., Charlotte, N. C., sums up the high-speed performance of their new ¾-yard Lorain TL-25J shovel. And they have pay dirt records to go by. Working in a mixture of clay and rock, the "TL-25" averages 1000 yds. per 10 hours—has hit a high of 1500 yds.—on a seven-mile, 200,000 cu. yd. road widening job near Shelby, N. C.

Owners who have checked this modern, new Lorain design—compared feature for feature—have decided, too, that it's "best built" in its class! Let your Thew-Lorain Distributor show you how this fast, powerful ¾-yard class shovel can add speed to your jobs!

THE THEW SHOVEL CO.
LORAIN, OHIO

Reasons why
LORAIN TL-25's ARE "BEST BUILT" IN THE ¾-YD. CLASS

NEW DESIGN PRINCIPLE—"Interchangeable Packaged Components"—clutch shaft, engine, hoist shaft, cab, crawler propelling mechanism—may be removed and replaced as one unit.

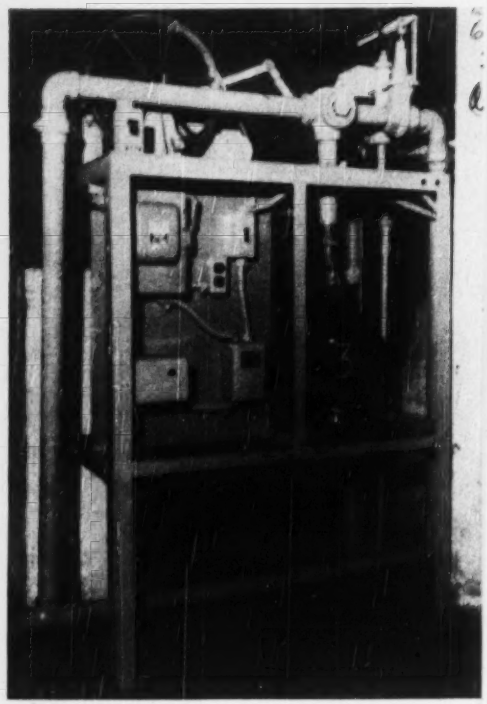
INCREASED OUTPUT—it's packed with power and speed for fast, snappy performance—more working cycles per minute—more yardage per day.

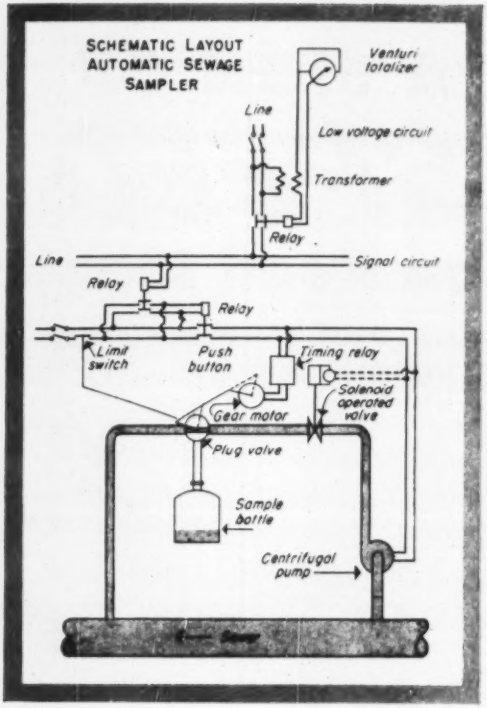
"BUILT-IN" FEATURES—more values for your money; 3 identical clutches with interchangeable parts; one piece bed; oil-enclosed cut gears; anti-friction bearings; hook rollers; it's a "complete package"—no extras to buy!

7 MODELS TO CHOOSE FROM—3 crawler mountings to fit any travel or digging condition; 4 rubber-tire mountings in either single-engine (7 m.p.h.) Self-Propelled or two-engine (30 m.p.h.) Moto-Cranes.

STOP! SEE YOUR THEW-LORAIN DISTRIBUTOR

THEW LORAIN





SHOP-MADE AUTOMATIC SEWAGE SAMPLER—A two-inch plug rotated by a gear motor composites a sewage sample according to flow. The motor is actuated from delicate contacts on the Venturi-meter totalizer.

Motorized valves sample sewage in proportion to flow

George S. Long
Sewage Treatment Works, Akron, Ohio

Sampling of sewage—in step with flow as measured by Venturi meters—is routine practice at the Akron sewage plant.

It's done with a plug valve rotated at intervals by a small motor. The electric motor is set in motion by a contact on the totalizer of a Venturi meter.

Sewage is delivered to the sampler either by gravity or by pumping.

• **Elements detailed**—The actual sampling is done by a straight-away plug in a 2-in. three-way plug-valve housing. It should be noted that a 2-in. plug is the smallest that can be safely utilized with raw sewage. Smaller openings can clog.

The volume of the cored-out interior of this plug is about 10.5 cu. in. When this quantity is taken for every 100,000 cf of sewage passing through the plant, a composite sample is collected on days of lowest flow sufficient for routine analysis. Another advantage is that the 5-gal sample bottle will only overflow during days of extreme high flow—about five times a year according to past records.

The plug is rotated through a 90-deg arc by a crank-arm connected to a V-belt pulley. The pulley, making one revolution per sampling cycle, is driven by a slow-speed (6-rpm) motor.

The plug valve, normally open, is mounted so that its branch outlet points downward and terminates in a rubber tube. The tube is inserted in the 5-gal sewage-collecting bottle.

The gear motor is actuated by an electrical contact on the Venturi-meter totalizer. The contact is adjusted so delicately that it just touches the needle of the 10,000-cf dial. This permits closing of the actuating electric circuit but does not interfere with the needle's turning. The contact is also set for a duration short enough so that the circuit will break just before the sampling cycle is completed. Sewage coming to the Akron plant is measured by two 48 by 28-in. Venturis operating in parallel. These meters seldom deviate more than 3% from the average. A sampler actuated by the totalizer of either meter is, therefore, sufficiently accurate for chemical and bacteriological analyses.

The plug valve, gear motor, electric controls, piping and sample bottle are assembled in a stand made of welded angle iron.

• **Two setups**—Sewage, of course, must be delivered to the sampler. When the sampler is below the hydraulic gradient, sewage is gravity-fed to it through a gate valve. The hydraulically operated valve is controlled by a solenoid. It's opened and closed by an electrical contact, exactly like that inciting the plug valve's gear motor.

If the unit is above the flow line, sewage must be raised to it. In this case a 50-gpm 0.5-hp centrifugal pump is put to work.

• **How it works**—When the Venturi

totalizer indicates passage of the required amount of sewage, its revolving hand makes contact and closes a low-voltage pilot circuit. This closes a relay that energizes the signal circuit to the sampler.

The signal circuit in turn closes relays on power circuits at the sampler that—first, opens the gate valve or starts the pump—and second, energizes a timing delay.

The delay is set to allow time for a thorough purging of the sampling line before closing the circuit to the plug valve's gear motor.

When the plug valve turns from the normally open position, it isolates a sewage sample equal to the core's volume. Continuing to rotate to the point of complete cut-off, the core opening passes the branch-outlet opening and its contents are discharged to the collecting bottle.

At the end of this quarter turn, the plug reverses direction and returns to the normally open position.

A limit switch operated by a connecting rod (that drives the plug valve) breaks the relay-holding circuit at this point. This stops the apparatus and leaves it ready for the next sampling cycle.

A push button makes it possible to take a catch sample at the sampler without affecting the composite sample in the big bottle.

• **Learning with the first one**—The first automatic sampler was installed in the basement of the administration building and tested with raw sewage. Analytical results were more consistent but they were also consistently lower in solids than hand-collected samples. The latter were pumped from the sewer within ten feet of the automatic sampler. Careful investigation proved that the hand-sampling method was at fault.

At first the sampler—after completing one—would immediately start a second cycle. This was corrected by a minor adjustment at the totalizer. The contact was set to such short duration that, at times of low flow, the pilot circuit would break before the sampling cycle was completed.

• **Three units at work**—When the "shakedown" sampler had proved itself, three more were built. These are installed on effluent lines from the Imhoff tank, the trickling filter and the entire plant. The last two are above the flow line. They are fitted with centrifugal pumps for raising sewage to them. The Imhoff effluent sampler is fed by gravity through a gate valve.

• **Gremlins?**—After these samplers operated for a time, it was observed that some of the sample bottles contained more sewage than others.

An investigation showed that grease had not been forced into all the grooves and recesses during installation and servicing. These were filling with sewage and discharging into the bottle as the valve rotated. Thorough and frequent servicing has corrected this defect.

The control mechanism attached to the totalizer was designed and built by Philip Castanare of the sewerage department. The remainder of the automatic sampler was assembled by personnel at the treatment works from standard commercial equipment.

Equipment in Automatic Sewage Sampler

Item	Rating	Manufacturer
Three-way valve with straight away plug	2"	American Car & Foundry Co.
Gear Motor	5.7 rpm, 1/6 hp 110 v 60 cycle	General Electric Co.
Motor-driven centrifugal pump		
Vertical (motor)	1 hp, 1750 rpm 110/120 v 60 c	Fairbanks Morse & Co.
(pump)	1¼", 50 gpm	
Horizontal (motor)	½ hp, 1750 rpm 115/120 v 60 c	
(pump)	1¼", 50 gpm	
Solenoid controlled hydraulically operated valve	2"	Ruggles-Klingermann
Motor-operated timed delay		General Electric Co.
Magnetic relay switch		General Electric Co.
Limit Switch		General Electric Co.
Push-button starter		General Electric Co.
Starting relay (2 pole)		Clark Controller Co.
Disconnect switch		Trumball Electric Mfg. Co.

Precast slabs, curb and pile caps in S. C. bridges

Three simple precast concrete parts—now being produced in quantity by divisions of South Carolina's Highway Department—have been assembled into pile-supported bridges up to 70 ft in length.

A curb section, a slab section and a pile cap are the standard units out of which a cheap, rugged replacement for aging timber crossings can be erected. The concrete structure is quick to assemble, inexpensive to maintain and suitable to remove and reuse elsewhere as needed.

Creosoted timber piles are used, as usual. But they are topped with a rectangular-section precast concrete pile cap. This has holes through which drift pins can be driven to tie it to the piles.

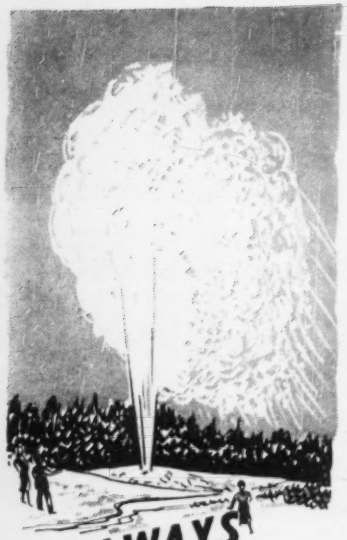
Then, spanning the 10-ft between pile bents are 8-in. thick precast concrete floor slabs, 5 ft wide. These have bottom steel only: ¾-in. rods on 6-in. centers longitudinally and ½-in. steel on 12-in. centers transversely. (Slabs to span up to 14 ft are also cast.)

Side edges of the slabs are cast concave and convex to give a tongue-and-groove effect when they are placed side-by-side. End edges have semi-circular grooves (half-sections of 1¼-in. pipe) cast along their centerlines, so that when two slabs are butted, a hole is formed through which a 1-in. steel rod can be threaded as a transverse tie. This rod has two threaded ends that extend outside the curb sections, where plate washers and nuts are slipped on and tightened.

The curb section is reinforced, slightly tapered toward its top, and has a short section of deck slab cast with it. There are several weep holes cast through the curb above the deck slab surface to help drain off the roadway.

Roadway width, using four deck slabs and the two curb sections, is 22 ft 6 in. As many spans as are required can be built—in lengths from 10 to 14 ft. With piles driven, it takes little time to place the precast bridge units.

Casting is done in highway department yards. All parts are completely cured and checked before removal to the job.



ALWAYS DEPENDABLE

WARRINGTON-VULCAN
Single-Acting

STEAM PILE HAMMERS

The dependability of Warrington-Vulcan pile hammers has been proved thousands of times on job after tough job all over the world. Men who use them will tell you they're really great hammers, rapid, rugged and economical, simple in design and operation . . . built to meet requirements established by experienced contractors.

Warrington-Vulcan hammers operate at medium steam pressure, delivering a moderate frequency of low velocity blows from a relatively heavy ram to drive piles of any description.

Write today for complete details and the name of your nearest distributor.

VULCAN IRON WORKS
Since 1892
331 North Bell Avenue
Chicago 12 ---Illinois

READER COMMENT

Cone-Penetration Tests

Sir: From W. W. Moore's article, "Pile Foundations—Less Guess, More Design," published in the Sept. 1, 1949, issue of your paper, I gathered that predetermination of pile lengths by cone-penetration tests—regularly used in Holland with very satisfactory results—is practically unknown in America. In many cases a lot of money can be saved in applying this method.

At present predetermination is being used in Holland for almost every important foundation investigation. It is used to select the layer on which pile tips are to bear, according to the strength of the layer as measured on the site in a cone-penetration or sounding test. To obtain ample information about the soil tested, a test boring is always executed together with the cone-penetration test.

A small cone is pushed into the soil, and the resistance the soil offers to this penetration is measured. On a graph, this resistance can be plotted against the depth of penetration. In this way a record of the resistance of the soil in depth is obtained, from which the strength of the different strata can be easily read.

The apparatus consists of a cone with a base surface of 10 sq cm, fitted to the end of a steel rod. To measure force necessary to push the cone into the soil, hand power is executed on handles that form part of a hydraulic system. Pressure in the hydraulic system is read on a manometer which gages the soil's strength. To prevent friction of the soil on the rod from having influence on the readings, the rod is surrounded by a tube. Both tube and rod come in one-meter lengths that can be coupled for attaining desired depth.

A complete description of this apparatus will be found in the Proceeding of the 1936 International Conference on Soil Mechanics and Foundation Engineering, Vol. I, p 7.

A deep-sounding apparatus, used in predetermining pile lengths, can exert a load of 10 tons and penetrate soil to a greater depth than a concrete precast pile rammed with a heavy steam hammer.

Results of sounding tests indicate relative strength of the different soil layers and make it possible to discover with great accuracy any soft strata in their natural state. It has been proved that results of sounding tests are more reliable than test borings as regards determination of the actual depth and thickness of the different strata in a soil profile.

The procedure in designing pile foundations, now generally accepted in the Netherlands, is to perform a sufficient number of test-borings and cone-penetration tests for each foundation. Subsequently the pile lengths are selected according to the date obtained in these tests, in such a way that the piles will reach over a certain length into a sandy or gravelly layer of low compressibility and sufficient thickness. This procedure has been followed for about 15 years and has proved to be very sucessful. In these years over 7,000 deep-sounding tests for determining pile lengths have been executed.

For some projects this procedure has led to considerable savings. For instance, the execution of deep-sounding tests for the foundation of drilling towers in Lake Maracaibo in Venezuela led to the selection of piles 82 ft shorter than originally proposed. As each drilling tower is founded on 12 piles, the total economy in pile length per drilling tower was nearly 1,000 ft.

Predetermination of pile lengths based on cone-penetration or deep-sounding tests, together with test borings, has proved to be very simple and accurate. The writer is convinced that, when this method is given a fair trial in America, it will justify its use as well as it did in our country.

F. C. DE NIE
Civil Engineer
Utrecht, Holland

Likes Pipe-Cutting Method

Sir: We believe information such as "Quick, Cheap Cast-Iron Pipe Cutting," in your issue of Sept. 28 can save many a headache.

We started using torch and electrodes on sheetpiling in December, 1949. Our divers cut 80 feet of ½ inch sheeting 77 ft below the water in total darkness, at water temperature of 39 deg, in suitable time.

Under water or on top, a guide must be used to assure straight lines. As we were using 400 ft of cable under water, we jacketed the amperage to 350 and the oxygen pressure to 60 lb.

We OK and recommend this type of torch anywhere, as it will cut any metal, pierce and shear.

It was tough going for us until we learned to use this method—divers at $37.50 a day cost money. We figured a 50% saving.

CLARENCE E. SMITH
C. E. Smith Marine Construction and Salvage Co., Cortland, N. Y.

Lithographed on stone by James E. Allen

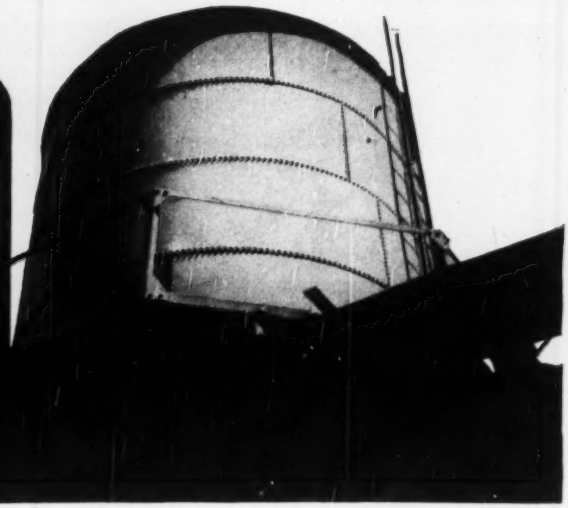
U.S. cast iron PIPE

FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

Cast iron pipe is tough, husky, but not exactly handsome. What it lacks in eye appeal it makes up for in dependable quality. To see that our product's reputation for quality is lived up to—and to strive for still higher quality—this Company has made substantial investments in facilities for *quality control* and for *research and development.* The recently completed Research Laboratory and Developmental Foundry at Burlington is an important contribution to a long-range program of process and product development. **United States Pipe and Foundry Company, General Offices: Burlington, N. J. Plants and Sales Offices Throughout U. S. A.**

positive corrosion protection at lower yearly cost

WITH
PURE METALLIZED
ZINC AND ALUMINUM



15,000 gallon sprinkler tank. Interior metallized with .006" pure zinc, in 1934—no trace of corrosion in 1950.

The long-lasting, corrosion resistant qualities of pure metallized zinc and aluminum coatings are well known. Life expectancies for protective coatings of this nature, properly applied, usually range upwards of 20-30 years without further attention.

A new series of 18 basic engineering specifications, called the Metco Systems, recently announced by Metallizing Engineering Co., provide the answer to standardization of surface preparation, coating thickness required for various service conditions, and after-coatings of different materials to meet specific requirements.

The result of over 19 years' continuous testing of pure metallized zinc and aluminum coatings in corrosion protection service, Metco Systems cover the protection of structures and equipment under a wide range of corrosion conditions.

These include actual immersion in salt or fresh water of various pH values; exposure to water ballast, condensate and some mild acid solutions; salt, humid, rural and industrial atmospheres ranging from light to heavy. The Systems also contain provisions for appearance requirements with specific organic coatings, available in a range of colors, all thoroughly tested for compatibility with the metallized zinc or aluminum.

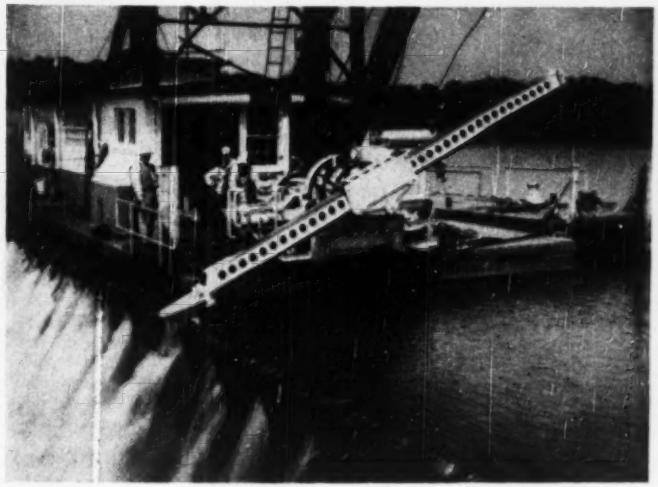
The following organizations are set up to provide positive corrosion protection at lower annual cost in accordance with Metco* System specifications. For further information, or a copy of descriptive bulletin, contact the one nearest you.

*Reg. U. S. Pat. Off.—Property of Metallizing Co., Inc.

Metco System contractors

Akron Sand Blast Co. 50 E. Springfield Rd. Barberton, Ohio Tel. Plaza 3412	**Dix Engineering Co., Inc.** 1417 Dix Road Lincoln Park 25 (Detroit), Mich. Tel. Atlantic 8822	**Metal-Cladding, Inc.** Lakeview & Porter Avenues Buffalo 1, N. Y. Tel. Elmwood 9536
Metalweld, Inc. Fox & Hunting Park Ave. Philadelphia 29, Pa. Tel. Radcliff 5-3471	**Nooter Corporation** 1420 South Second Street St. Louis, Missouri Tel. Main 6000	**Thermaflo Metal Products, Inc.** 50 Dell Avenue New London, Conn. Tel. 2-4300	**Arthur Tickle Engineering Works, Inc.** 21 Delevan Street Brooklyn, N. Y. Tel. Main 5-4200

FIELD AND OFFICE



FOR MOVABLE DAMS—Ohio River engineers try a new device on an old structure.

Engineers Test Pilot Model of Wicket Positioning Device

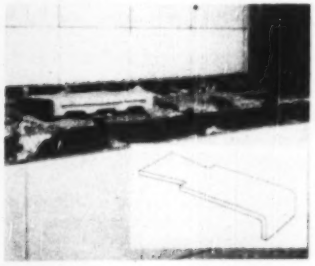
A device is being tested by the Louisville District, Corps of Engineers, that makes positioning of wickets on movable Ohio River dams less difficult, less dangerous. (For answer to the question, "What are wickets?," see ENR March 9, p. 34.)

The present method of raising and lowering the 200 to 397 wickets per dam on the river involves manual grappling with a hook, then hoisting with a derrick line. This manual operation must be repeated for each wicket in the dam.

This new device, mounted on the forward end of a floating maneuver boat, uses the 90-deg. swing, thrust and draw movement of a stiff, steel arm in positioning the Chanoine type wickets.

Minor modifications are contemplated for the device to adapt it for other uses. One change would separate the engine and pump from the hoist itself, putting them elsewhere on the deck for better positioning of loads and arrangement of work space.

The pilot model pictured here was designed by two Louisville District employees of the Corps, Arnold Bailey and E. R. Thompson.



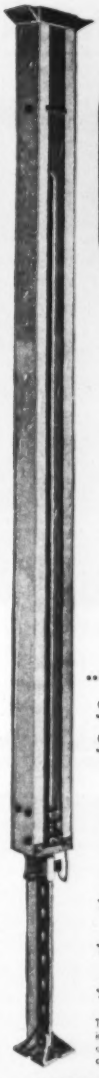
CERAMIC TILES are held in place by corrosion-resistant clips shown in insert.

Clips hold tile in place

Wrought iron clips are used to hold ceramic tile in place in the new Battery Park Underpass at New York City. The clips for this particular job—60,500 of them—were fabricated from a 1 in. strip that had been slit from a wider strip ⅛ in. thick. They were cut to dovetail shape at one end, and the opposite end was bent at a 90 deg angle. They were then galvanized for complete coverage.

Each tile has a groove on two opposite edges, midway of the thickness, and when a tile is set into place, the dovetail end of a clip is inserted into a channel set into the concrete wall. The bent flange of the clip is fitted into the groove in the uppermost edge of the tile, and the cement is applied to make a permanent installation. The job is done in less time and the ceramic tile is easier to line up when using the clips.

The wrought iron clips were made by National Radio Laboratories, Inc., Paramus, N. J., and galvanized by Diamond Expansion Bolt Co., Garfield, N. J. Ceramic tile was set by Shinick Building Co., N. Y.



SYMONS SHORES FIRST CHOICE

because . . . .

★ LIGHTER
10 to 15 lbs.

★ SAFER
Have greater load capacity

★ FASTER
Work like hydraulic

★ COMPLETE
Scab, Tee-head, and Extension allow for every type of use

Try these shores on your next job. See for yourself . . . you'll be convinced that Symons Shores are FIRST CHOICE because of the savings they will mean to you in time and money.

Symons Column Clamps Save Money on Every Job

★ SIMPLE CONSTRUCTION
Only two units—both alike, no loose parts

★ SIMPLE TO APPLY
Require only a hammer, and are completely adjustable

★ SQUARE COLUMNS
Automatically and accurately

These simple compact units put tidy savings in your pocket. Their function is clear—to do a good job, at a low cost, with complete accuracy. That's precisely what they do.

RENTED WITH PURCHASE OPTION

Symons Shores, Column Clamps and Forms can be rented with purchase option. Paid rentals apply on purchase price.

Symons COLUMN CLAMPS FORMS SHORES

SYMONS CLAMP & MFG. CO.
4265 West Diversey Avenue, Chicago 39, Ill.

Please send information on items checked.

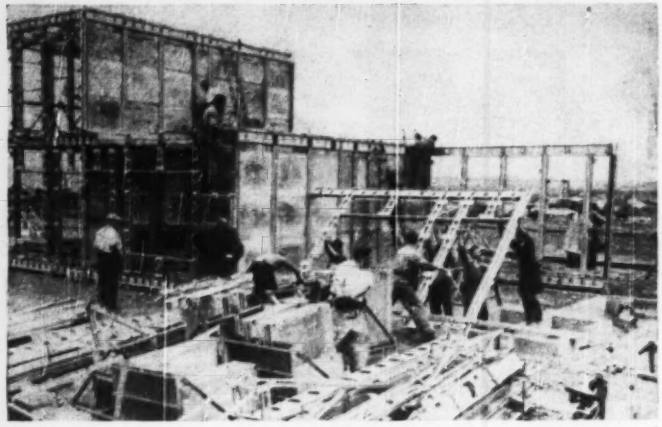
☐ Column Clamps ☐ Bar Ties and Tie Chairs
☐ Shores ☐ Forms

Name _____

Address _____

City _____ Zone ____ State _____

DEVELOPMENTS ABROAD



FAST FRAMING—Sheet metal framing for housing unit in project at Eindhoven, The Netherlands, is tilted up and bolted into position.

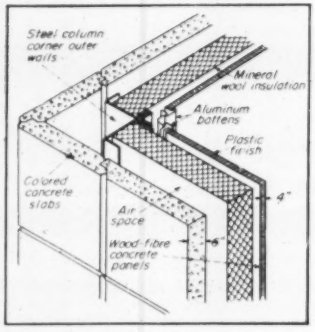
Prefabrication speeds Dutch housing project

A method of construction called Polynorm is being used for fast erection of 200 one-family houses at Eindhoven, The Netherlands. Work started in August and is scheduled for completion before the end of this year.

The Polynorm method calls for steel-frame construction, precast concrete walls and a thin concrete roof covered with aluminum.

The steel frame consists of spot-welded, sheet metal columns, beams and joists. Colored concrete slabs, 6 in. thick, are attached to the outside of the frame and 4-in. thick wood-fiber concrete slabs to the inside. Mineral-wool bats are placed between these wythes for insulation.

The inner surface of the inner wythe and the ceiling are finished with a washable plastic. Floors are covered with a rubber compound. In this way, through standardization of structural components and elimination of mortar, plaster and paint, the houses can be erected in the scheduled time with a minimum of labor.



PRECAST WALL—Concrete slabs are attached to the steel frame to form the wall.

Foreign Briefs

Sanitary engineer—Herman G. Baity, professor of sanitary engineering at the University of North Carolina, Chapel Hill, and president of the Inter-American Association of sanitary engineering, has gone to Geneva, Switzerland, as consultant sanitary engineer for the World Health Organization. He will assist in the organization of a conference of the senior sanitary engineers of European countries at The Hague in November. Other assignments include consultation with sanitary engineers from Austria, Sweden and Finland.

Rio's new city hall—The municipal offices of Rio de Janeiro (Prefeitura do Distrito Federal) will be housed in a 15-story building on the Rua da Misericordia, due for completion in mid-1951. Providing 17,350 square meter of floor space, it is expected to cost $1,750,000. Designed by municipal architects and being built by the firm of Moacir Barcellos, it follows standard Brazilian methods—reinforced concrete framework and floors with brick or tile panels forming the exterior walls.

To improve navigation—The Ganges and Bhagirathi rivers in West Bengal have been surveyed for a dam project which will make the Bhagirathi navigable the year round, and eventually provide a bridge and railroad link connecting Calcutta with northwest Bengal without passing through Pakistan. The Bhagirathi has been almost dry for about 30 years. It is navigable only for two months in the year. The completed project will improve the port of Calcutta and greatly facilitate inland navigation.

Loans to Ethiopia—The World Bank has decided to make two loans totaling $7,000,000 to Ethiopia—the first loans by the bank to any nation in Africa. One loan, of $5,000,000, is for rehabilitation and maintenance of the country's road system. The other, of $2,000,000, will provide foreign exchange for projects being financed by a new Ethiopian Development Bank.

Big road job in Colombia—The Colombian government has signed a contract with the Raymond Concrete Pile Corp. for extensive work at the port of Buenaventura. The work is divided into three parts: Concrete paving of the road from Buenaventura to the Cauca Valley between Buenaventura and Aguaclara; construction of the road between Aguaclara and El Queremal, incuding bridges (paving to be carried out later); construction of a side road from El Queremal to El Saladito. The projects are to be executed in two years, but Raymond is prepared to do them in one year if the Columbian government closes the Cali-Buenaventura road. Cost of the work is estimated at $2,499,000.

Turkish power—Chas. T. Main, Inc., Boston, Mass., are engineers for a large power production and transmission project about to get under way in Turkey. The largest hydroelectric plant in the country will be built with ECA assistance at Sariyar on the Sakarya River between Ankara and Istanbul. The project, including transmission lines to industrial centers of northwest Anatolia, will cost $47,000,000. Initial installation will consist of two generating units, each of 40,000 kw capacity. The ultimate capacity will be 160,000 kw.

Arabian roads—The Saudi Arabian government recently signed a contract with London firms for the construction of a main road between Jedda and Medina. The contracts cover the construction of a road 260 miles long, and include road foundation and surfacing work, bridge buildings, ancillary work, and maintenance. Construction will be done with British equipment.

MONSANTO PENTA protects this drive-in restaurant building against damage by termites and fungus decay. Mr. Davis, with 40 years' experience in the retail lumber business, knows the hazard of termites and fungi. He chose Monsanto PENTA after a thorough investigation of wood preservatives.

protected against termites, protected against decay with

MONSANTO PENTAchlorophenol

(SANTOPHEN 20)

Having lumber pressure-treated with Monsanto PENTAchlorophenol, the drive-in restaurant erected in suburban St. Louis by Builder J. W. Davis is protected two ways. First, it is protected against termites in an area where they often are a problem. Second, fungi that cause wood to rot cannot damage the structure. It will last many years longer, and have lower maintenance costs, than similar buildings that are unprotected.

The yellow pine studding and the tongue-and-groove sheathing of the building, up to 96 inches above the ground line, are treated with eight pounds of PENTA per cubic foot. Such Monsanto PENTA protection in the "danger zone" is thorough and economical.

PENTA is a chemical developed especially for wood preservation. It always delivers uniform, dependable results. PENTA does not leach out of wood nor wash away in rain or ground water. Inspection of material treated with Monsanto PENTA shows that the preservative continues to penetrate into the wood as time goes on. Treated with properly formulated PENTA, wood can be used in doors, windows and other parts which are to be painted or varnished. PENTA formulations also can be made water-repellent.

No matter what use you are making of wood, it will pay you to employ lumber that is protected by Monsanto PENTA. For information on sources of such lumber or PENTA formulations and on methods of applying PENTA, mail the coupon or contact the nearest Monsanto Sales Office. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1759-K S. Second St., St. Louis 4, Mo.

Santophen. Reg. U. S. Pat. Off.

DISTRICT SALES OFFICES:
Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle.
In Canada, Monsanto (Canada) Ltd., Montreal.

MONSANTO
CHEMICALS — PLASTICS

MONSANTO CHEMICAL COMPANY
Organic Chemicals Division
1759-K South Second Street, St. Louis 4, Missouri

Please send the following: ..... Names of suppliers of penta-treated lumber; ..... Names of suppliers of penta solutions; ..... information on applying penta.

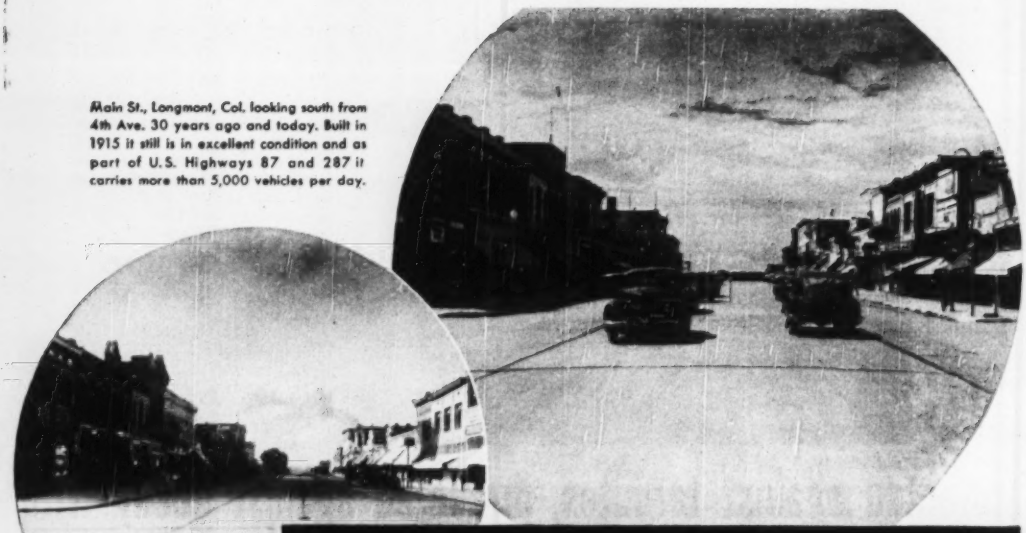
Name ..... *Title* .....

Company .....

Street .....

City ..... *Zone* ..... *State* .....

SERVING INDUSTRY . . . WHICH SERVES MANKIND



Main St., Longmont, Col. looking south from 4th Ave. 30 years ago and today. Built in 1915 it still is in excellent condition and as part of U.S. Highways 87 and 287 it carries more than 5,000 vehicles per day.

A short story about long service—CONCRETE STREETS in Longmont, Col.

LONGMONT, Col. paved its first street with concrete in 1915. By 1923 it had 105,000 sq. yd. of concrete in service on its busiest streets.

Angus E. Slee, City Engineer of Longmont for 14 years, has this to say: "After 28 to 35 years of service, this paving is in excellent condition. Practically the only maintenance that has been required has been the filling of expansion joints with tar every two or three years. A conservative estimate of the probable life of this paving would be another 70 years."

"This contrasts very sharply with our experience with a lower type of paving placed in residential districts commencing in 1933. While lower in first cost, this paving has to be replaced completely every two to three years. We have spent enough on maintenance and replacement of this type of surface to have put in portland cement concrete paving, and our residential streets are still a constant source of expense and complaints."

Other city officials all over America also have learned that concrete pavement lasts longer and needs less maintenance. They have discovered too that concrete pavement usually costs less to build than any other pavement of equal load-carrying capacity and that in the long run all these factors add up to ***low annual cost,*** making concrete the best pavement buy for any city.

For more information write for a free copy of the 112-page booklet, "*Concrete Pavement Design.*" Distributed only in the United States and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. 10d-17, 33 W. Grand Ave., Chicago 10, Ill.

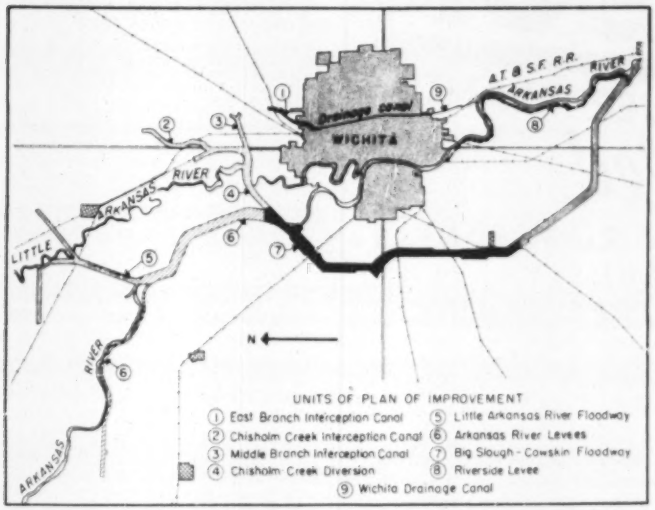
A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

Left: 4th Ave., looking east from Bross St. Built in 1916 it still is giving dependable service today.

•

Right: 5th Ave., looking east from Gay St. Built in 1919, this pavement is in good condition after rendering over 30 years of uninterrupted service.

MUNICIPAL AFFAIRS



Flood waters to be diverted around Wichita, Kan.

The city of Wichita, Kan., has now let contracts for a $16,250,000 project by which local engineers expect to divert floodwaters around the city without occasioning any construction work within city limits.

Of the total cost the federal government will apply $10,730,000 and local interests, including the city of Wichita and Sedgwick County, will contribute $5,520,000.

The plan, briefly, is this:

The channel of the existing Wichita Drainage Canal, cutting through the city in a southerly direction, is being cleaned and rectified so that it can handle flows from the east branch of Chisholm Creek as well as interior drainage from a part of the city.

Flood waters of the Little Arkansas River will be cut off northwest of the city, 9 miles away, and a floodway built for about three miles to the main Arkansas River.

Chisholm Creek, which enters the city from the northeast, will be intercepted and diverted by a floodway to the west to join the Arkansas River above the city.

At the point where this Chisholm Creek floodway enters the Arkansas River, the river itself will be cut off and its floodwaters diverted through a leveed floodway 900 ft wide and 19 miles long to the west of the city, reentering the main river about 7 miles south of the city near the town of Derby.

As part of this project, the right bank of the Arkansas River will be leveed for a distance of 7.7 miles northwest of the mouth of the Little Arkansas River Floodway, at an average height of 8 ft. From the mouth of this floodway to the Chisholm Creek diversion and beginning of the Big Slough-Cowskin Floodway (a distance of about 5.8 miles) the river will be leveed on both sides to a height of 9 ft. The levees will be 1,400 ft to 2,000 ft center to center and will form a channel that will pass an estimated 68,000 cfs.

The unusual feature, of course, is the fact that the city expects to obtain complete protection without the necessity of building flood walls or doing channel improvement within its corporate limits.

Others affected by the changeover will be the five railroad lines; two U.S. highways; two state highways, and a number of county roads and city streets. Also, oil and natural gas pipelines will be affected at 44 points, telephone and electric lines at 68 points.

A total of five new highway bridges and four new railway bridges will be built.

C. O. Schofield is engineer in charge for the city and country under the general supervision of the U. S. Army Corps of Engineers, through the district engineer's office at Tulsa.

Five new fire stations—At Indianapolis, Ind., a $400,000 bond issue for the construction of five new fire stations has been approved by the city board of safety.

dependable as a WEINMAN PUMP

You can put complete reliance on what your WEINMAN representative tells you about your pumping requirements. His recommendations are based on years of "shirt sleeve" engineering experience in applied hydraulics. They are backed by an organization where every key man has at least 25 years of concentrated experience with one product—PUMPS. His recommendations are free for the asking and you incur no obligation. Just write, wire or phone.

for general pumping service... The WEINMAN Unipump

For use where space is limited . . . may be mounted in any position . . . very compact. Capacities 10 to 1000 G.P.M. Heads to 500 feet. For informative bulletin on UNIPUMPS, fill out the coupon below.

Built by Centrifugal Specialists
The WEINMAN Pump Mfg. Co.
296 SPRUCE ST. COLUMBUS 8, OHIO

Gentlemen:
I would like to learn more about WEINMAN Unipumps. Send Bulletin 726-C to

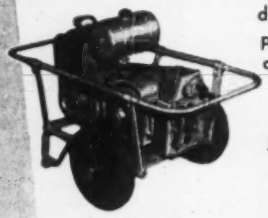
NAME
FIRM
ADDRESS
CITY STATE

JACKSON

PORTABLE POWER PLANTS

Unequaled IN RUGGEDNESS RELIABILITY— TROUBLE-FREE SERVICE!

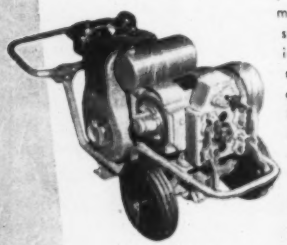
Ask any of the thousands of contractors who use Jackson Portable Power Plants and they'll tell you, practically to a man, that there is nothing that compares with these plants for downright reliability and the ruggedness that provides continuous service, day in and day out with no interruptions.



Model M-1
Capacity: 1.25 KVA

BOTH SINGLE PHASE AND 3-PHASE 60 CYCLE, 115 VOLT AC

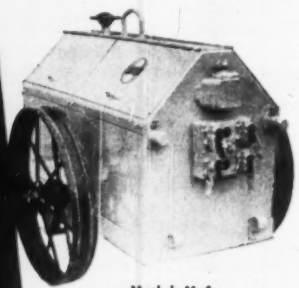
All models produce both single phase and 3-phase, 60 cycle, 115 volt AC to their full rated capacities and therefore are ideal for operating Jackson vibrators, lights and a wide variety of contractor's power tools. Each is equipped with a permanent magnet generator (containing less than one-sixth of the number of small parts contained in the conventional generator) which requires no adjustment and no maintenance. They are easy to start and never a source of trouble. Engines are a nationally renowned brand, rated tops for this type of equipment. Available in 1.25, 2.5 and 5 KVA capacities — wheel, trailer or skid mounted.



Model M-2
Capacity: 2.5 KVA

FOR SALE OR FOR RENT AT ALL JACKSON DISTRIBUTORS

EQUIPPED WITH PERMANENT-MAGNET GENERATORS WHICH REQUIRE NO ADJUSTMENT OR MAINTENANCE — CONTAIN LESS THAN ONE-SIXTH OF THE PARTS IN A CONVENTIONAL GENERATOR.



Model M-4
Capacity: 5 KVA

ELECTRIC TAMPER & EQUIPMENT CO. Ludington, Mich.

Cities plan for parking

Some 185 communities in 1949 had ordinances calling for off-street parking facilities in connection with new apartment and business buildings, according to the American Society of Planning Officials in Chicago.

Quoting a recent survey made by the Highway Research Board, the association pointed out that only Chicago, Cleveland, Detroit, Washington, D. C., and Los Angeles require parking facilities for tenants or users of new buildings among U. S. population centers of more than 500,000. Since 1949, however, New York has adopted similar zoning provisions.

Twenty cities with populations of around 100,000 do have off-street parking zoning provisions, the association says. Among the largest of these are: Hartford, Conn.; Miami, Fla.; Atlanta, Ga.; Peoria, Ill.; Des Moines, Iowa; Kansas City, Kan; Cambridge, Mass.; Kansas City, Mo.; Omaha, Neb.; Rochester, N. Y.; Nashville, Tenn.; and Richmond, Va.

Although off-street parking regulations are generally in connection with the construction of new apartment buildings, some 64 cities also require such facilities for new business buildings.

Seattle, Wash.—Preliminary plans for a 1,000-car parking garage in the retail district of Seattle are being prepared by John Graham, architect, Henry Broderick, realtor, and Jules Charbneau, business man. As now conceived, the structure would extend three or four floors below ground and perhaps 13 floors above and would provide suitable air shelter for some 20,000 persons. The group would plan to finance the project through the RFC when approved.

New York City.—Plans for the construction of an 800-car garage above the south ramps of Pennsylvania Station were made public by Jerry Finkelstein, chairman of the city planning commission. A hearing for the proposal of a Penstation Garage, Inc., was held on Oct. 11. The company estimated its construction costs at $2,000,000. Mr. Finkelstein says that the garage would take 2,500 cars off the street in the Penn Station area.

Indianapolis, Ind.—A list of proposed locations for 750 additional parking meters in this city, some 187 of them to be located in the Fountain Square area, has been sent to the Board of Public Works. The locations have been recommended by Traffic Engineer Frank Gallagher and approved by the Board of Public Safety. Bids have already been received for the additional meters.

Whether your daily water consumption demands be 3,000,000 gallons or hundreds of times that figure, Lock Joint Pipe Company is prepared to provide a supply line for your requirements.

In the last few years the Company has supplied not only hundreds of miles of large diameter pipe but also more than a million feet of 16" to 24" pipe for municipalities and industry. This has been made possible through the establishment of three permanent manufacturing plants. Lock Joint Concrete Pressure Pipe from 16" to 42" in diameter, produced at these plants, can be shipped economically to all parts of the country —for both major installations and minor extensions.

Our representative will be glad to discuss with you any water supply or transmission project which calls for pressure pipe 16" in diameter or larger. You will find that Lock Joint Concrete Pressure Pipe's superior characteristics of long life, continuous high flow and negligible upkeep will recommend it above all others for any permanent water supply installation.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

LOCK JOINT PIPE COMPANY

Est. 1905

P.O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich.

BRANCH OFFICES: Cheyenne, Wyo. • Denver, Col. • Kansas City, Mo. Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. • Wichita, Kan. Kenilworth, N. J. • Hartford, Conn.

SUPERIOR

Cone-Fast COIL TIES

YOU CAN CUT YOUR FORM COSTS!

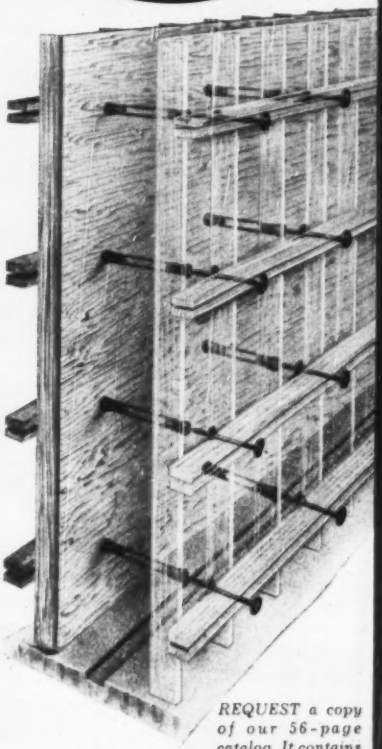
The cost of form work is a vital factor in the total cost of bridge piers and abutments, retaining walls, filtration and sewage disposal plants, and other engineering projects. And no other phase of this type of construction offers greater opportunity in savings of material and labor costs.

To use Superior Cone-Fast Coil Ties is one direct means of cutting costs. The *exclusive* feature of this Coil Tie is the extension of the coil beyond the ends of the wire struts *(enlarged detail above)*. The reamed Coil Cone fits snugly over this projected coil. The Coil Cones are applied before the opposing panel is erected and the cone pointed Coil Bolts then engaged in the Coil Ties, an easy operation because of the large square opening in the cones. This simple operation is particularly advantageous when large panels are used for walls that do not permit a man inside the forms.

The Bolt Holders shown in the panel on the right keep bolts and washers on the panel while it is being stripped and moved for reuse.

Cone-Fast Ties are made for Coil Bolts ½" to 1¼" in diameter with safe working loads from 5,000 to 36,000 pounds for use with wood, combination wood and steel, and all steel forms to meet the requirements of every type concrete structure.

Preplan your form work to get the maximum uses from your form panels. The spacing charts in our catalog will help you design these panels for the average job and our engineering department will help you in the design of your special problems that are not covered by these spacing charts.



REQUEST a copy of our 56-page catalog. It contains a valuable table for spacing studs, wales, and form ties.

SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

Pacific Coast Plant: 2026 Livingston St., Oakland 6, Calif.

New York Office: 1775 Broadway, New York 19, N. Y.

MEN AND JOBS

Oscar D. Seawell, civil engineer with General Electric in the design section of the reactor division at Hanford Works, Richland, Wash., has been named one of 30 men to attend the Atomic Energy Commission's year-long School of Reactor Technology at Oak Ridge, Tenn. He was a construction engineer at Oak Ridge before going to Hanford a year ago.

Announcement has been made by **William Pereira,** head of W. L. Pereira, architects and engineers, that a partnership has been formed with **Charles Luckman,** former president of Lever Brothers Co. The firm will be known as Pereira and Luckman, and will specialize in large commercial and institutional engineering and architecture, with headquarters in Los Angeles. Mr. Luckman was graduated with honors in engineering and architecture from the University of Illinois.

Walter F. Winters, formerly special projects engineer of The Asphalt Institute at Denver, Colo., has been made chief engineer with headquarters at 801 Second Ave., New York 17, N. Y. **Bernard Gray,** formerly serving as both president and chief engineer, relinquishes the latter post. Mr. Winters took the engineering course at Washington State College, with supplementary courses at the University of Virginia and Northwestern University. This was followed by 19 years of engineering experience in the State of Washington, and military service from 1940 to 1946, with many citations and awards, and promotion to the rank of colonel.

Working on the $1,000,000 improvements for the city water department of Marion, Ind., are, left to right, W. K. Saunders, mechanical superintendent; D. A. Kline, general superintendent; J. E. Limbaugh, assistant superintendent, all of the C. & C. Construction Co.; J. F. Barjenbruch, resident engineer, of Consoer, Townsend & Associates, consulting engineers, Chicago; and D. P. Backmeyer, superintendent of Marion water and sanitation departments; kneeling, R. J. O'Keefe and B. F. Jesse, field engineers for C & C Construction Co.

A farewell party was held by the Oakland, Calif., Board of Port Commissioners for Col. F. S. Tandy before his transfer from U. S. district engineer, San Francisco, to Camp Carson, Colo., to head the training of engineer units. Left to right: Wm. H. Park, president of the Oakland Chamber of Commerce; Colonel Tandy; Col. Kenneth M. Moore, new district engineer, San Francisco; Claire V. Goodwin, president of the Oakland Board of Port Commissioners, and Col. John S. Seybold, Division Engineer, South Pacific Division, Corps of Engineers.

Capt. John J. Chew, former Public Works Officer of the Bureau of Yards and Docks at the Naval Shipyard in New York City, has replaced Capt. W. O. Hiltabidle as Inspector General for the bureau. Captain Chew is a 1915 graduate of Cornell University. He was commissioned in the CEC in 1921, and was assigned to the Philadelphia Navy Yard. In 1925 he was transferred to the Navy Yard, Charleston, S. C., as assistant public works officer. He later served as public works officer at Tutuila, Samoa.

John J. Hennigan, succeeds **Geo. P. Hanna** as director of the Bureau of Sanitation, Syracuse, N. Y. Mr. Hanna had served since October 1948. Mr. Hennigan is a civil engineer graduate of Manhattan College.

James Riddell is county engineer of Carleton County, Ont., succeeding **John Adams,** resigned.

John A. Maddux is highway superintendent of Decatur County, Ind.

Fred W. Haselwood has retired from the Department of Public Works, Division of Highways, of California after 38½ years of which 26 were spent as district engineer in the three northern districts of the state. He will be a consulting engineer with headquarters at Redding, Calif.

Extraction of Two U·S·S H-Piles after Long Test Embedment reveal minimum Corrosion and High Load Capacity*

RECENTLY two occasions presented themselves for extracting steel H-Piles which had been furnished by Carnegie-Illinois Steel Corporation and were installed for test purposes a number of years ago. Inasmuch as both piles were likely to be covered with new construction, it was deemed desirable to extract them while they were still accessible. Examination disclosed that they had satisfactorily resisted corrosion for prolonged periods of time under severe service conditions. Detailed data on the two piles, from the site of the Bonnet-Carre Floodway and from the Houston, Texas, Harbor Turning Basin, are given herewith.

BONNET-CARRE FLOODWAY, Louisiana
Test Piles Driven 1933, Extracted 1950

FACTUAL

DURING April and May, 1933, eight steel H-Piles were driven in a swamp alongside of the highway from New Orleans to Baton Rouge, La., near the upstream side of the Bonnet-Carre Floodway. Four of these piles were anchor piles and four were test piles. Two of the anchor piles straddling the test pile were used to support the jacking girders. The longest test pile, a 12"-65 lb. steel H-Pile was extracted in January, 1950. This pile had been driven 122'3" below the ground line.

While the photographs show the soil filling only the H in the lower 80 feet of the pile, the pile actually carried out of the ground a plug approximating a rough circle with the soil extending out about 1½" to 2" from the center of the flange faces and about 2" to 3" beyond a straight edge across the edges of the flanges. After the excess soil came clear of the ground, the loose material dropped off and the stiffer cohesive soil was sheared off in passing through the square hole between the large girders which carried the hydraulic jacks.

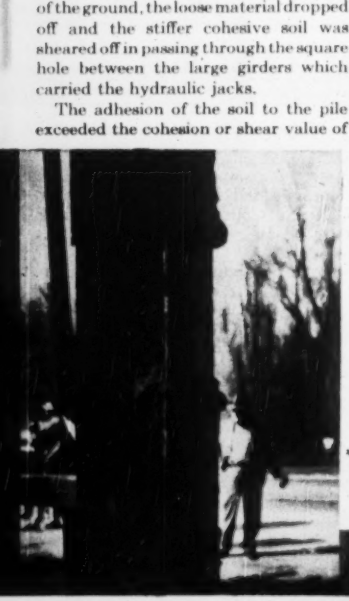
The adhesion of the soil to the pile exceeded the cohesion or shear value of the soil itself. This phenomenon is generally observed when piles are withdrawn from cohesive soil.

Figure 1 shows the soil strata as recorded by original borings about 25' from the pile, and soil strata as carried out between the pile flanges. It will be noted that there is close agreement between the two logs. This is of interest as it shows that the relatively soft cohesive material in the upper strata, through which the pile was driven, did not form a tight plug between the flanges and carry the various soil strata down to lower levels.

In very hard and in cohesionless materials there is a tendency for a hard core to form between the flanges of H-beams. This core or plug usually carries the compacted soil strata down to lower levels as frequently revealed by the extraction of false-work piles. Where such solid cores form, they add materially to the bearing capacity of a pile.

There was no measurable corrosion on the pile, the mill scale being intact. Red lead paint on the pile tip was as fresh as new. White painted footage numerals on the flange had a new appearance. What appeared to be a roughened zone for 30 inches over the range of the fluctuating water table at about minus 5 feet below local datum, developed on laboratory examination to be a thin, hard mineral crust. After the crust was removed in a solution which also removed the mill scale, the pile was found to caliper within the original mill dimensions.

Preliminary work with the corrosion test method developed by the National Bureau of Standards indicates that two of the random selected soil strata surrounding this pile are corrosive to steel



Close-up where upper section was cut off for removal. Note soil adhering to face of flange. Soil which extended beyond line of edges of flanges was scraped off while moving up between flange edges of jacking girders.

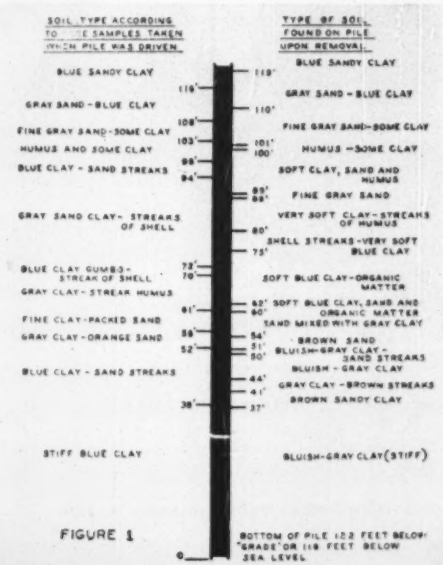

SOIL TYPE ACCORDING TO SAMPLES TAKEN WHEN PILE WAS DRIVEN.
TYPE OF SOIL FOUND ON PILE UPON REMOVAL.
BLUE SANDY CLAY
BLUE SANDY CLAY
GRAY SAND - BLUE CLAY
GRAY SAND - BLUE CLAY
FINE GRAY SAND - SOME CLAY
FINE GRAY SAND - SOME CLAY
HUMUS AND SOME CLAY
HUMUS - SOME CLAY
BLUE CLAY - SAND STREAKS
SOFT CLAY, SAND AND HUMUS
FINE GRAY SAND
GRAY SAND CLAY - STREAKS OF SHELL
VERY SOFT CLAY - STREAKS OF HUMUS
SHELL STREAKS - VERY SOFT BLUE CLAY
BLUE CLAY GUMBO - STREAK OF SHELL
SOFT BLUE CLAY - ORGANIC MATTER
GRAY CLAY - STREAK HUMUS
SOFT BLUE CLAY, SAND AND ORGANIC MATTER
FINE CLAY - PACKED SAND
SAND MIXED WITH GRAY CLAY
GRAY CLAY - ORANGE SAND
BROWN SAND
BLUISH-GRAY CLAY - SAND STREAKS
BLUE CLAY - SAND STREAKS
BLUISH - GRAY CLAY
GRAY CLAY - BROWN STREAKS
BROWN SANDY CLAY
STIFF BLUE CLAY
BLUISH-GRAY CLAY (STIFF)
BOTTOM OF PILE 122 FEET BELOW "GRADE" OR 116 FEET BELOW SEA LEVEL

FIGURE 1

Soil strata as recorded by original borings about 25' from the pile, and soil strata as carried out between the pile flanges. Note that there is close agreement between the two logs.

* *This report was summarized in an article, "Extracted Steel H-Piles Found in Good Condition," by G. G. Grenlich, Engineering News Record, August 24, 1950.*

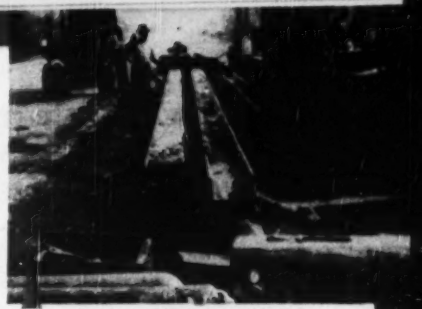
when in the presence of oxygen. *Actually, the soil was in contact with the steel piling for seventeen years and did not corrode the steel even to the extent of removing the mill rolling scale.*

It is of interest that while this pile took a maximum test load of only 98 tons with a settlement of .35 inch 20 hours after driving, *seventeen years later a force 25% greater produced a movement of only .25 inch, or about two-thirds of the load test settlement.* At the time of driving, 44 blows with a Vulcan No. 1 Single Acting Steam Hammer were required for the last foot of penetration. The calculated safe load by ENR formula was 37 tons against a maximum test load of 98 tons shortly after driving, an apparent factor of safety of 2.65 which would indicate the ENR formula as quite conservative for H-Piles in the deep, relatively soft clays and other soils found at this site.

On the basis of 180 tons pull or 18,850 lbs. per sq. in. on the pile section with zero load at the bottom and maximum load down 41 ft., the elastic elongation of the pile is .63", which was the observed movement of the upper end of the pile at the preceding uplift. It is likely, therefore, that the lower end of the pile started to move upward at just about the 180 ton pull.

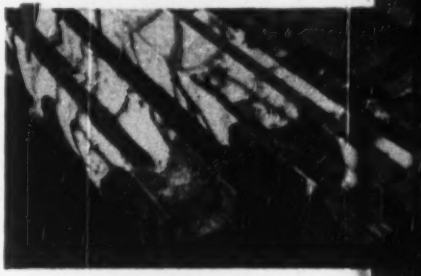
Load to extract the pile had to be increased to a value approaching 300 tons to secure an uplift of 1¼". After this uplift, the soil around the pile was ruptured and the load dropped back to 180 tons after a total movement of 2½". Pull gradually decreased to 105 tons at the end of the first day's operation when total extraction equalled 4'7". During the second day an additional 7'6" of pile was jacked out with a 75 ton load necessary for movement at the end of 12'1" total extraction.

Also worthy of note is the average cohesive value of all the soil strata surrounding this pile. Based on the length of 122' and a net perimeter of 4'4" for the plug of soil extracted with, adhering to, and extending beyond the limits of the pile as mentioned elsewhere, the cohesive or shear value if 680 lbs. per sq. ft. of plug surface area up to the 180 ton load for which rate of extraction was proportional to the pull, and 1130 lbs. at incipient rupture as the load reached an approximate peak of 300 tons after 1¼" of upward movement.



Pile as cut into three sections on ground after removal. Stiff bluish clay is intact in lower section. As noted in text, soil was sheared off beyond edges of flanges during extraction. Soft mixture of clay and humus has dropped out of upper half of middle section and all of upper section.

To the right is pointed lower tip of pile with stiff bluish clay removed from outside of near flange and between flanges. On the left is lower end of second section cut off 52 ft. above pile tip with brown sand removed from between flanges and mixture of stiff clay and sand adhering to outside of flange.



REPORT

HARBOR TURNING BASIN, Houston, Texas
Test Pile Driven 1937, Extracted 1949

A STEEL H-Pile was driven at the site of the proposed Wharf No. 9 Houston, Texas, Harbor Turning Basin to a penetration of minus 72 feet through various layers of sand and clay and mixtures thereof. When originally driven in August, 1937, the pile was at the edge of the shore line just away from the water. Sometime during the intervening 12 years, removal of earth resulted in the pile being in about six feet of water.

The 12"—72 lb. H-Pile was driven to a resistance of 185 blows for the last foot of penetration with a No. 1 Vulcan Hammer. A sandbox was erected on steel brackets on the pile and a total test load of 100 tons was applied. Eight months later in May, 1938, the total settlement was ⅜" including elastic compression of the pile. Shortly thereafter the lateral bracing was removed from the top of the pile so that it would swing free. This was done to permit the top of the pile to sway slightly as under service in a wharf, and thus to determine if such movement would accelerate settlement. There was no additional settlement observed when the load was removed in June, 1939, twenty-one months after initial full loading.

Steel H-Piles were used when Wharf No. 9 was constructed in the Fall of 1949. The test pile had been used as a mooring for barges and had been bent back and forth at a point 3 to 4 feet below the mud line. The pile was eventually broken off entirely by means of a clam shell bucket at the point where initial fracture had started due to repeated bending. Just a few days prior to removal a barge had bent the upper end of the pile out of sight under the water.

Examination of the straight portion of the recovered piece of pile which was between one and two feet below the mud line and which seemed to be corroded as much as any portion of the pile above the recovered piece revealed that after over 12 years in the mud and water, the average corrosion rates of the upper end of the sample, calculated from the original nominal thicknesses, were 0.0026 inch per year on each surface of the flange, and 0.0015 inch per year on each surface of the web.

Based on a 65-ton service load on this pile which would result in about 6000 lb. per sq. inch unit stress, eleven-seventeenths of the metal could be lost before the unit stress in the pile, acting as a fully supported column would reach 17,000 lbs. per sq. inch unit stress. *To reach this condition would take 85 years for the flanges and 95 years for the less exposed web, the former determining the minimum useful life expectancy at this location.* The actual life might be much longer because ordinarily the rate of loss by corrosion decreases, as in soil the products of corrosion tend to gradually produce an inhibitive encasement.

CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH • COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

H-BEAM BEARING PILES

UNITED STATES STEEL

NOW . . . fully revised and enlarged to give you . . .

THE LATEST AND BEST IN CIVIL ENGINEERING PRACTICE AND PROCEDURE

Here, to meet the needs of practicing engineers who must solve specific problems — particularly those outside their specialized fields—is a modern treatment of the *fundamentals, theory,* and *practice* of the various subdivisions of civil engineering. With the aid of the up-to-date, detailed data and practice given in this completely revised 3rd Edition, you can check your present methods and procedures . . . enhance your ability to handle all kinds of jobs *more quickly and efficiently.* Each of the book's 10 big sections has been completely rewritten to bring you right up to the minute on advances and developments in the widely diverse fields of civil engineering.

New 3rd Edition

CIVIL ENGINEERING HANDBOOK

Editor-in-Chief,
LEONARD C. URQUHART

Consulting Engineer, New York, N. Y., and Newark, N. J., Former Colonel, Corps of Engineers, and Professor of Structural Engineering, Cornell University. **976 pages, 6 x 9, over 900 illustrations, tables, and diagrams, semi-flexible cover, $8.50.**

If you *plan, select, design,* or *build* civil engineering structures, you'll find this tailor-made handbook a guide that is more useful than ever in helping you to save time and trouble in procuring vital information . . . in avoiding costly errors . . . in putting today's approved procedures right at your fingertips. From city surveying and stresses in beams, through bridge trusses and welding and riveting, to pile foundations and intakes and dams—everything you want and need to develop economical, efficient practices is discussed.

10 BIG SECTIONS

1. Surveying
2. Railway, Highway and Airport Engineering
3. Mechanics of Materials
4. Hydraulics
5. Stresses in Framed Structures
6. Steel Design
7. Cement and Concrete
8. Foundations
9. Sewerage and Sewage Disposal
10. Water Supply and Purification

SEE THIS BOOK 10 DAYS FREE

McGRAW-HILL

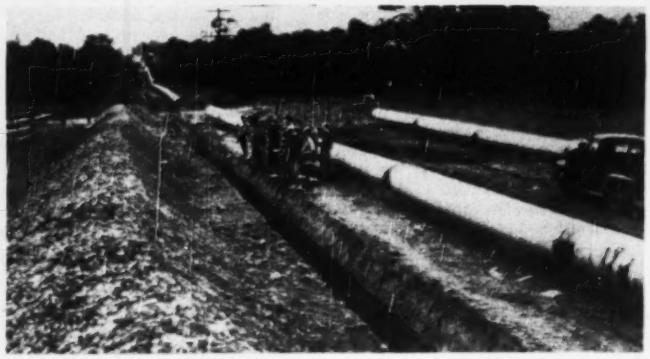
McGraw-Hill Book Co., Inc.,
330 W. 42nd St., New York 18

Send me Urquhart's **CIVIL ENGINEERING HANDBOOK** for 10 days' examination on approval. If the book proves satisfactory, I will remit $2.50 in 10 days, and $3.00 monthly until $8.50 is paid. Otherwise I will return the book postpaid.

Name .....
Address .....
City ..... Zone ..... State .....
Company .....
Position ..... NR 10-26-50

This offer applies to U. S. only.

EDUCATION and RESEARCH



OUTDOOR CLASSROOM—The world's longest oil pipeline is being used to explain to students of Princeton University the importance of geology to our national economy. Faculty members of the department of geology, headed by Prof. Edward Sampson, are currently using the trench of the pipeline of the Transcontinental Gas-Pipeline Corp. passing near Princeton, to show the profile of the soil and the effects of weathering. The corporation began digging the line in Texas two years and a half ago. The 1,832 miles to W. 134th St., New York City, will be completed in a few weeks. The total cost of the project is expected to exceed $200,000,000.

Faculty News

Donald E. Stearns, chairman of the department of civil engineering of Syracuse University's College of Applied Science, has resigned. He will practice as a consulting engineer in the water supply and sewage field in Syracuse.

Capt. Nicholas A. Lord of the Corps of Engineers has been appointed assistant professor of military science and tactics at Carnegie Institute of Technology. He received a bachelor of civil engineering degree from Clarkson College of Technology in 1940, and served with the U.S. Army and

BRICKLAYER'S APPRENTICE CONTEST—About 200,000 people at the recent Minnesota state fair witnessed the apprentice bricklaying competition sponsored by the AGC of Minnesota, Structural Clay Products Institute, Region 6, and the Minnesota State Conference of Bricklayers. Contestant Ray Pavola of Duluth, is shown midway on the project which made him winner for the day. One of the three judges is shown at the left—Architect H. H. Crawford of Rochester, Minn. Of the 21 apprentices who competed, the four finalists finished in this order: Donald Johnson, St. Paul; Wesley Barrette, Stillwater; Dale Wicklund, Virginia; and Richard Bastien, St. Cloud.

Air Force from 1941 to 1945. He was a civil engineer with the New York State Public Works Department in 1946-47, and returned to the Army in July 1947.

Appointment of Zay Jeffries of Pittsfield, Mass., former vice-president of the General Electric Co. as Leonard Case Professor and consultant on educational policy on the faculty of Case Institute of Technology has been announced. Dr. Jeffries also will serve as chairman of a committee on educational policy to guide the reorganization of the curriculum and instruction at Case so that the recommendations made by the self-survey recently completed by the staff may more completely be realized.

A past president of the National Academy of Sciences, Dr. Jeffries holds the degree of doctor of science from Harvard and the honorary degree of doctor of engineering from the South Dakota State School of Mines, of which he is a graduate.

Industrial wastes—The sixth industrial waste conference will be held at Purdue University, Lafayette, Ind., Feb. 21-23, 1951. The program will cover developments in waste disposal and utilization. There will also be discussion of changes in laws and regulations, stream qualities, and surveys. There will be separate sessions on wastes in food processing, dairies and metals manufacture; also discussion of laboratory procedures and conservation of resources.

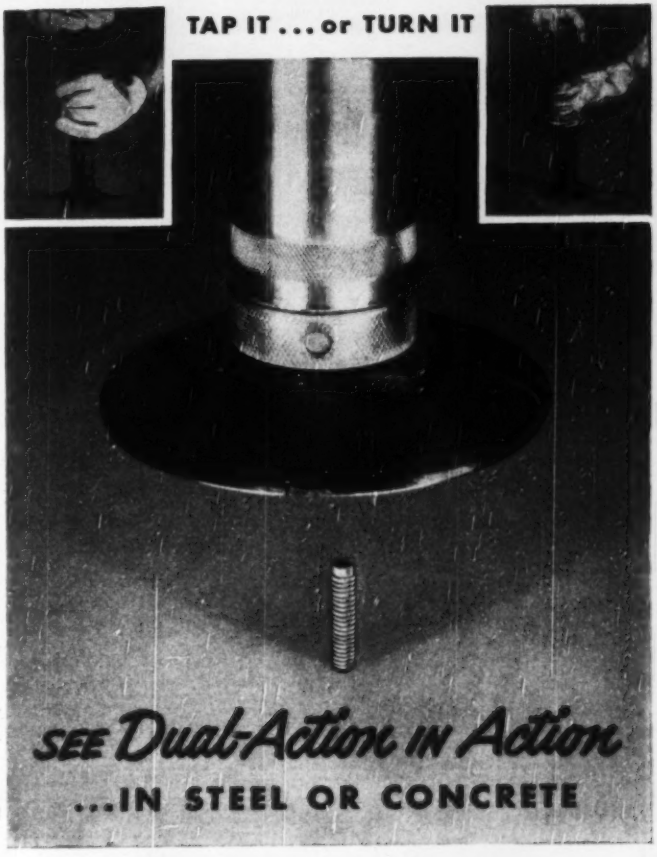
Special Calif. law permits extra money for schools

The California State Legislature at a special session ended Sept. 26 acted to unfreeze the limitation on the $250,000,000 state bond issue money for school-house construction in needy districts.

A bill passed by the special session allowed immediate use of $100,000,000. An existing legal restriction holding spending to $5,000,000 a month would apply to the remaining $150,000,000 of the bond money thereby preventing needed construction.

Proponents of rapid school construction in California were dismayed in August when an attorney general's opinion held the bond issue money could be spent only at the rate of $5,000,000 a month.

In another action the assembly granted an additional $5,000 appropriation to enable an interim committee to complete a statewide study of public works requirements of local government agencies having to do with education.



At no cost to you, we'll do an actual fastening job for you, in steel, concrete, other building materials, with RAMSET DUAL-ACTION Fastening Tool . . . the only powder-actuated tool that offers this *dual choice* of TURN . . . or TAP . . . operation for easier, faster fastening in more locations.

We'll show you how DUAL-ACTION has more built-in stability than ever before. We'll prove also, the extra utility, extra economy of RAMSET DUAL-ACTION. Long life and dependability, too, come from precision-built, hardened steel parts, that resist continuous wear and corrosion.

With varying strengths of powder charges to insure correct penetration, with widest range of steel drive pins and threaded studs, and with DUAL-ACTION, you'll save time, work, money. Call your local RAMSET Specialist or write us for free sample demonstration. RAMSET FASTENERS, INC., *12117 Berea Road, Cleveland 11, Ohio.*

Ramset Fastening System
Pioneer in powder-actuated fastening

WISCONSIN — Both Heiliner Scrapers and Bottom-dump Wagons were used on this airport job. Scraper capacity 18 cu. yds. — Bottom-dump wagon 20 cu. yds.

PENNSYLVANIA — When the going's tough, like it is in the wet, slippery, sticky clay on this road job, you can count on Heiliners to give you faster haul cycles.

ILLINOIS — Keeping "Farm to Market" road costs down with a Heiliner. Note Heil Cable Dozer on tractor.

KANSAS — At Cedar Bluff Dam, dirt moved fast with Heiliners on the job — thanks to plenty of lugging power, high top speed, bonus loading, and passenger-car steering.

244 More Pay Yards with a Heiliner

... proof that Heiliners move more dirt, faster—at less cost

● That was the margin of superiority in an exacting competitive test. A contractor, with 2,000,000 yards of heavy, wet clay to move in a hurry, wanted earthmoving results. He arranged a test. The final figures showed that the Heiliner moved 244 more pay yards per shift than competitive units.

Put Heiliners on your job and you, too, will enjoy faster haul cycles, more pay yards, larger profits. Get the complete Heiliner story from your Heil distributor, or write for latest bulletins.

THE HEIL CO.

DEPT. 1100, 3001 W. MONTANA STREET, MILWAUKEE 1, WISCONSIN

Factories: Milwaukee — Hillside, N. J.

District Offices: Hillside, Washington, D. C., Atlanta, Milwaukee, Detroit, Chicago, Minneapolis, Kansas City, Dallas, Los Angeles, Seattle

NEW JERSEY — The Heiliner's efficient scraper design loads faster, eliminates voids for larger payloads, dumps cleanly and more rapidly at the fill for more round trips.

Mail this coupon today for NEW Catalog — just off the press!

THE HEIL CO.

Dept. 1100, 3001 W. Montana Street
Milwaukee 1, Wisconsin

I am interested in moving more dirt faster, at less cost. Please send me new catalog showing cost-cutting advantages of Heiliner design.

Name ..... Title .....

Company .....

Company Address .....

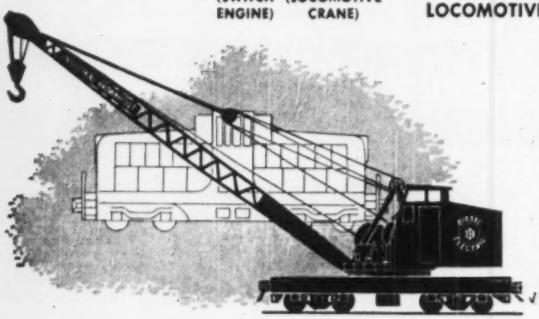
City ..... ( ) State .....

R-559

NEW ARITHMETIC FOR COST MINDED EXECUTIVES:

1+1=1 BROWNHOIST

(SWITCH ENGINE) (LOCOMOTIVE CRANE) DIESEL ELECTRIC LOCOMOTIVE-CRANE



Two big pieces of material handling equipment in one — that's what you get in the Brownhoist Diesel Electric Locomotive-Crane — a heavy-duty switch engine, and a powerful locomotive crane of 30 tons capacity, and up.

New clear-vision boom design allows operator an unobstructed view through the lower end of the boom, an area that is a blind spot on many cranes.

And the Monitor-type cab assures 360° visibility from the operator's position. Safety engineered design gives 14" clearance between revolving upper work and car body.

Write today for more complete information.

BROWNHOIST BUILDS BETTER CRANES

INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN

DISTRICT OFFICES: New York, Philadelphia, Cleveland, San Francisco, Chicago. AGENCIES: Detroit, Birmingham, Houston, Los Angeles, Portland, Seattle, Spokane, Canadian Brownhoist Ltd., Montreal, Quebec.

The BELMONT IRON WORKS

Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Beliron

STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED
Shops — Eddystone

PHILADELPHIA — ROYERSFORD

Main Office Philadelphia 48, Pa.

New York Office 44 Whitehall St. N. Y. 4, N. Y.

EPPINGER AND RUSSELL CO.

Wood Preservers Since 1878

80 Eighth Ave., New York 11, N. Y.

PRESSURE TREATED
TIES—POLES—PILING—LUMBER
WITH
Creosote or Chromated Zinc Chloride

TREATING PLANTS
Jacksonville, Fla. Norfolk, Va.
Eddington, Pa.

OBITUARY

Joseph Oakley Brown, 62, president of Todd & Brown Inc., civil engineers, New York City, died at Bronxville, N. Y., Oct. 13. His most notable engineering works were in connection with the restoration of Williamsburg, Va., and the construction of Rockefeller Center, New York City. For the last five years he had been consulting engineer for the Port of New York Authority on the building of the New York International Airport at Idlewild, Queens. A graduate of New York University, he started out as surveyor and engineer of the Scarsdale Corp., which developed Scarsdale Village, N. Y., and thereafter he advanced steadily in his profession.

Leo McCarthy, 60, died Oct. 2 in Malone, N. Y. A road contractor for 30 years, he was in charge of grading the grounds for the New York World's Fair in 1939. He also was in charge of construction of air bases for the U. S. Government in Bermuda during World War II.

Charles F. Buchanan, 56, an engineer with the Buffalo, N. Y., Sewer Authority, died Oct. 7. He had been in the employ of Buffalo for about 30 years.

Hyman B. Nagler, 50, civil engineer for the New York State Dept. of Public Works in Binghamton, N. Y., died Oct. 5.

Raymond Christie Beucler, a retired sanitation engineer, died on Oct. 6 at Denton, Md.

Edmund M. Neher, 55, of Milwaukee, Wis., died Sept. 30. A civil engineer graduate of Marquette University, he had retired in 1947. Formerly he worked for the Reconstruction Finance Corp., the Truscon Steel Co., and for private firms in and around Milwaukee.

Joseph O'Loughlin, an engineer for the Federal Public Housing Administration in New York City, died in Newark, N. J., Oct. 6. He had lived there for 60 years.

Harry A. Ciuli, 57, an engineer with the Civil Aeronautics Administration, was killed in a plane crash at Versailles, Ky., while on a trip to study sites for airports. As a civil engineer he had worked on numerous government projects. He served in an Army Engineers unit in World War I.

Edward J. Batt, 29, a partner in the Charles A. Batt & Sons, Inc., contracting firm, Buffalo, N. Y., died Oct. 8.

William Elmhirst Duckering, 68, who went to the University of Alaska in 1932 as an engineering professor and remained to become its dean, died Oct. 7 at Fairbanks, Alaska. He received his B.S. in civil engineering from the University of Washington in 1909. He engaged in railroad engineering and served as bridge design engineer for King County at Seattle, Wash., before joining the University of Washington faculty in 1914. He became a professor of engineering at Iowa State College and served as head of the engineering department at the University of British Columbia before going to Alaska. At Alaska he had been dean of the faculty since 1935 and was honored with a doctor's degree in engineering last year.

Norman B. MacRostie, 66, leading Canadian engineer, died at Ottawa Oct. 6. A graduate of Queens University, he was for a time city surveyor and engineer of special works for Ottawa.

Anton Yost Hesse, 77, a retired Veteran's Administration civil engineer, died Oct. 3 in Hyattsville, Md. After nearly 30 years of government service, Mr. Hesse retired from the VA in 1945.

Edward S. Dalrymple, 51, for 28 years a contractor in Elmira, N. Y., died Oct. 9. He was secretary-treasurer of the Dalrymple Gravel & Contracting Co. The company carried out hundreds of paving jobs in New York State and Pennsylvania, as well as extensive sewer construction.

Seymour E. Weil, 54, a retired civil engineer, died in Jersey City, N. J., Oct. 9. Formerly he worked for N. Y. State and the New York Central R.R. as a civil engineer.

Developers must develop—A radical departure from policies of the past has been voted by the new Wakefield, Mass., Board of Public Works, when it was decided that in all future developments the developer must bear the entire cost of laying all services, including water and sewer, as well as streets and sidewalks. Previously the town has shared the cost. Often developers have built new houses and sold them under the impression that the town would provide all services. In some cases buyers have waited years before getting the services.

4940 PILES DRIVEN without a hitch!

McKiernan-Terry Hammer driving the first concrete pile at the Terminal de Pasajeros in La Guaira, Venezuela. Frederick Snare Corporation, Contractors.

Four McKiernan-Terry Type S-8 Single-Acting Pile Hammers were used to drive 4940 concrete and steel piles on this important project . . . making a typically perfect McKiernan-Terry record • Three of the hammers drove a total of 4000 18-inch square concrete piles, of 57-ft. average length. A fourth S-8 hammer drove 940 14-inch steel H-piles averaging 53-ft. in length • The report on this job states: "The performance of these hammers was excellent. All piles were driven to 63 tons bearing capacity, no mechanical difficulties were ever experienced with any of the hammers, and no repair parts had to be ordered." • Upon completion of the job, all four McKiernan-Terry Hammers were still in excellent condition, capable of a lot more work without requiring attention • This performance record illustrates why so many contractors choose McKiernan-Terry Pile Hammers for speedy, accurate and economical pile driving. 10 Double-acting hammers, 5 single-acting hammers and 2 extractors are available in the complete McKiernan-Terry line. Write for bulletin giving full data.

GRAB BUCKETS

COAL TOWERS

TRANSFER BRIDGES

MONING TO 42" I. D.

McKIERNAN TERRY

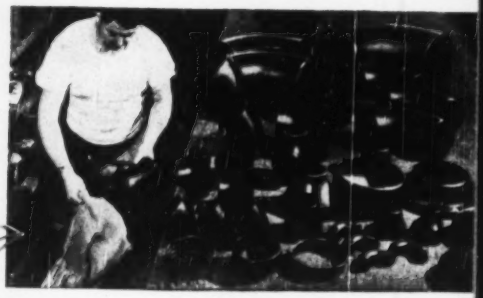
McKIERNAN-TERRY CORPORATION, MANUFACTURING ENGINEERS 13 PARK ROW, NEW YORK 7, N.Y.
Plants: Harrison, N. J., Dover, N. J.
MK-389

In all the world there's only one TUBE-TURN *Welding Fitting as shown by this trade mark... the right mark for every need in welding fittings and flanges.*

TUBE-TURN

TRADE MARK

More than ever, the services of your TUBE TURNS *Distributor can be important to the smooth operation of your business.*



TUBE TURNS, INC., LOUISVILLE 1, KENTUCKY DISTRIBUTORS IN ALL PRINCIPAL CITIES

DISTRICT OFFICES: NEW YORK • PHILADELPHIA • PITTSBURGH • CHICAGO • HOUSTON • TULSA • SAN FRANCISCO • LOS ANGELES

In Canada . . . Tube Turns of Canada Limited, Chatham, Ontario

ELECTIONS AND ACTIVITIES

B. O. Vannort, of Charlotte, has been elected president of the South Piedmont Chapter of Professional Engineers of North Carolina. Other officers, C. W. Moseley, first vice-president; D. M. Mackintosh, Jr., second vice-president; W. P. Wells, secretary-treasurer; M. E. Beatty, delegate to the state association; and G. J. Fisher, G. S. Rawlins and A. C. Lee named directors.

Withers Davis of Fayetteville has been elected president of the North Carolina State Highway Department Employees Association. He succeeds Z. R. Scott of Greensboro. Other officers: Otis M. Banks of Raleigh, vice-president and W. G. Reaves, of Raleigh, as general secretary-treasurer.

E. E. Robinson, Huntington Park, Calif., city engineering has been elected first president of the Central Basin Water Association, a group formed to conserve water in the basin and to explore new water sources.

Albert S. Gordon, executive assistant to the chairman of the Maryland State Roads Commission, has been elected president of the Maryland Classified Employes Association.

The Wisconsin Section of the American Water Works Association has elected Frank Quimby of Racine, president, Edward F. Taughe, Milwaukee, vice-president and William U. Gallaher, Appelton, AWA director for Wisconsin.

Leander I. Shelley, of The Port of New York Authority, has been elected president of The American Association of Port Authorities, Inc., succeeding Arthur Abel, port manager of the Port of Oakland, Calif. Composed of federal, state and municipal public bodies with the responsibility of development and operation of Atlantic, Pacific, Gulf and Great Lakes ports, the association is made up of representatives of major United States, Canadian and Latin-American ports.

Following are the new members of the N. C. State Building Code Council: Albert L. Haskins, Jr., architect, Raleigh, N. C.; W. Price Hand, general contractor, W. H. Hand & Son, Belmont, N. C.; Bernard Crocker, Jr., structural engineer, Raleigh, N. C.; George Robb, Robb P&H Co., High Point, N. C.; and L. H. Rouse, labor representative, Wilmington, N. C. Mr. Haskins was elected chairman and Mr. Crocker, secretary.

William J. Wenzel of Great Falls has been elected president of the Montana section, Society of Civil Engineers. Other officers: George Hoge of Great Falls, secretary-treasurer, and Earl Parson of Helena, Regional Hurdle of Billings, Emil Gehri of Hungry Horse and Thomas Smith of Great Falls, all vice-presidents.

J. Garrett Beitzell, veteran builder and realtor in Washington, D. C., is the new president of the Washington Real Estate Board, succeeding Oliver M. Walker. Edward R. Carr was chosen first vice-president and the new second vice-president is William M. Throckmorton. Out-going President Walker was named to the board of directors.

CALENDAR

Maritime Water Works Association, Admiral Beatty Hotel, St. John, N. B., Oct. 30-31.

Carolinas Branch, A.G.C., White Sulphur Springs, W. Va., Oct. 30-31.

Chesapeake section, American Water Works Association, DuPont Hotel, Wilmington, Del., Nov. 1-3.

Virginia Section, AWWA, Jefferson Hotel, Richmond, Va., Nov. 6-7.

North Carolina Section, AWWA, Washington-Duke Hotel, Durham, N. C., Nov. 13-15.

Florida and Cuban sections, American Water Work Association, Ft. Lauderdale, Fla., Nov. 13-15.

National Reclamation Association, Hotel Davenport, Spokane, Wash., Nov. 15-17.

Building Research Advisory Board, Research correlation conference, National Academy of Sciences Bldg., Washington, D. C., Nov. 21.

Indiana Water Conservation conference, Purdue University, Lafayette, Ind., Nov. 28-29.

Arizona Sewage & Water Works Association, Pioneer Hotel, Phoenix, Ariz., Nov. 30-Dec. 2.

American Association of State Highway Officials, Miami, Fla., Dec. 4-7.

County Engineers of Iowa, Iowa State College, Ames, Dec. 6-8.

Building Industry Employers of N. Y. State, BTEA Clubrooms, 2 Park Ave., New York City, Dec. 14-16.

Trade center—A $10,000,000 shopping center, to be known as Westgate, is being planned for a 60-acre tract at North Ave., and Highway 100, Milwaukee, Wis., by Kurtis R. Froedert, local industrialist. There will be a department store and 70 other business establishments, and parking space for 5,000 cars. The project is being designed by Architects Grassolt & Johnson.

These men are working for you

J. D. Mattimore, intense, soft-spoken Chief Engineer, Tube Turns' Product Engineering and Research Division.

Meticulous, scholarly A. R. C. Markl, Chief Research Engineer, Product Engineering and Research Division.

Thorough, analytical Arthur McCutchan, Chief Product Engineer, Product Engineering and Research Division.

T. D. Bridge, quiet, studious Product Engineer, Product Engineering and Research Division.

LIKE MOST U. S. manufacturers, Tube Turns, Inc. is sincerely determined to bring its customers the finest products possible. Fulfillment of that purpose is largely the responsibility of its research and product engineers.

No general practitioners, these men are recognized piping authorities, possessing highly specialized knowledge and training in the field of piping engineering. Together, they represent a total of more than 100 years experience in the design and application of piping, fittings, and flanges for power, oil, chemical, marine, and general industrial service.

Aided and abetted by a corps of trained technicians, their efforts are consistently directed toward one never changing goal: *better welding fittings and flanges to serve you better!*

Are you on the mailing list?

If you are concerned with designing or erecting piping systems, you'll want to receive new "Piping Engineering" bulletins. Just write us on your business letterhead, giving name, title, address.

"Be Sure You See The Double tt"

TUBE TURNS, INC.

LOUISVILLE 1, KENTUCKY

USF

Box Corrugated STEEL UTILITY BUILDING

Large or Small

The USF all-steel Utility Building is your economical answer to either a portable or permanent structure at lowest cost. Frames are prefabricated and pre-fit formed steel that simply bolt together. Box corrugated steel roofing and siding sheets attach with clip-and-wedge fasteners. No special tools are needed, no field punching, welding or riveting. Manual erection is generally possible on all but long span trusses. Suitable for permanent use or readily dismantled and transported.

Sizes range from 10' x 12' floor plans to either 26' or 30' span widths in 10' and 12' clear heights for erection in multiple lengths of 13'-4." Full range of doors, fenestration, etc.

WRITE for complete data or quotation.

USF
UNITED STEEL FABRICATORS, INC.
WOOSTER OHIO

UNIT PRICES BID BY CONTRACTORS

Intercepting sewer for Camden, N. J.

Only three of the 18 contractors who requested specifications on the Delaware River intercepting sewer submitted bids to the city of Camden, N. J., Sept. 20, 1950. The low bid at $1,185,090 was 3.7% below the second low bid and 9% below the high. Havens and Emerson, of New York, are consulting engineers.

This section of the sewer will parallel the Delaware River for about 2 miles north from Jackson St. where the sewage treatment plant is being constructed. Connections to the plant are not included in this particular contract.

The work must be completed in 450 calendar days. Some soft ground areas are expected, and wood piles will be used for support.

Minimum wages prevailing are: unskilled laborers, $1.50-1.60 an hour; scale mixermen, $1.90; blasters, $2.65; pipe layers, $2.10; cement finishers, $2.35; power tool operators, $2.15.

Bidders were:

1 C. Salvatore & Sons and Joseph Miele Const. Co., Orange, N. J. (Contract)	$1,185,090
2 Frank Nero & Son, Inc., Red Bank, N. J.	1,223,925
3 Francis A. Canuso & Son, Philadelphia, Pa.	1,291,225

Items		Quantity	Unit prices 1	C	2
Excav, earth	cy	55,000	$4.36		$3.80
Excav, earth below plan depth	cy	100	12	00	8 00
Excav, rock	cy	50	30	00	15 00
Engin cushion	cy	100	15	00	12 00
Bed sand, grav, scrng	cy	100	8	00	8 00
Wood piles	lf	8,000	3	00	2 00
Lumber, left in place					
Sheeting & shor	Mfbm	900	75	00	220 00
In foundations	Mfbm	80	75	00	300 00
Concrete, Cl A	cy	1,200	85	00	75 00
Cl B	cy	6,000	20	00	16 00
Addl Portland cmt	bbl	10	10	00	8 00
Brick masonry	cy	10	100	00	60 00
Steel reinfmt	T	40	350	00	350 00
Misc. cast iron wk	lb	37,000		24	30
Misc. steel wk, painted	lb	100		25	1 50
Galvanized	lb	100		60	2 00
FS vit pipe & specials					
12"	lf	20	10	00	6 00
15"	lf	1,300	7	00	9 00
Culvert pipe					
30" SS rein conc	lf	900	22	00	13 00
36" SS rein conc	lf	40	25	00	19 00
42" SS rein conc	lf	100	28	00	26 00
48" SS rein conc	lf	2,900	32	00	31 00
54" SS rein conc	lf	1,700	35	00	35 00
72" SS rein conc	lf	3,800	60	00	51 00
42" corrugated	lf	45	75	00	100 00
48" corrugated	lf	20	90	00	110 00
6" vit pipe underdr	lf	500	2	00	50
8"	lf	500	3	00	1 00
B & S cast iron pipe	T	30	200	00	160 00
Fittings	T	9	400	00	500 00
Std manholes	ea	27	650	00	300 00
Xtra depth of mh	vf	180	55	00	50 00
Std inlets, rem & repl	ea	2	200	00	450 00
Tide gates, 36" x 36"	ea	2	1,000		1,050
36" x 48"	ea	6	1,200		1,200
48" x 60"	ea	2	2,500		2,200
48" x 48"	ea	2	2,000		2,000
60" x 60"	ea	4	3,000		3,000
Regulator equip	ls		12,000		15,000
Painting	ls		600	00	1,000
Waterproofing	sy	1,400	2	00	2 00
Conc sidewalk restor	sy	220	6	00	7 00
Stone curb, reset	lf	210	3	00	2 50
Belg blk pav, restor	sy	14,000	5	00	7 00
Asph pav, restor	sy	700	8	00	4 00
RR crossing	ls		10,000		4,000
Tunnel liner plates	lf	30	175	00	200 00

Culverts and gravel road Jones Co., South Dakota

Two of the six bids on road work in Jones Co., S. D., were below the engineer's estimated $451,761. The low bid at $386,105.86 was 17% below the estimate, 16% below the second low bid and 25.4% below the high. H. C. Rempfer is State Highway Engineer.

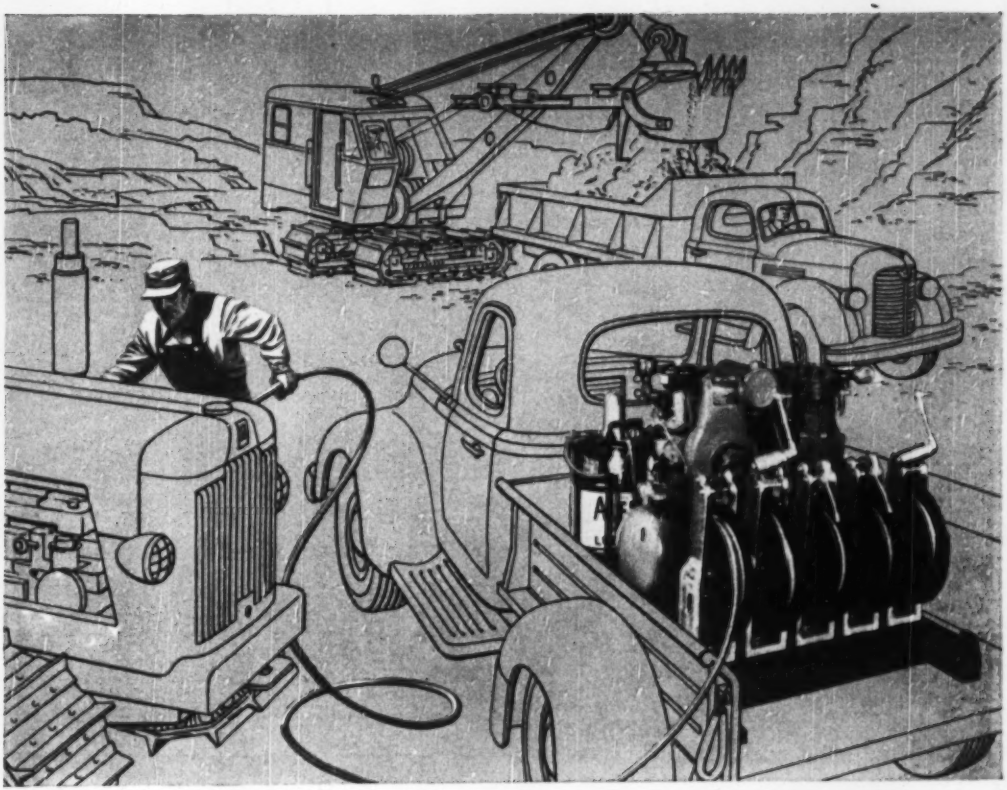
The South Dakota State Highway Commission took bids for this Federal Aid project on Aug. 22, 1950. The work, to be completed in 120 working days, includes grading, pipe culverts and gravel surface on 15.781 miles of U. S. Highway 16 starting 1¼ miles west of Murdo. All pipe and materials are to be furnished by the contractor. The Chicago, Milwaukee, St. Paul & Pacific Railroad parallels the highway.

The minimum wages specified in the contract are for skilled workers, $1.10 an hour; semi-skilled, $0.90; and common, $0.75. The average wage scales being paid, however, run about $1.75 for skilled labor; $1.30 for semi-skilled; and $1.00 for common.

Bidders include:

1 Schultz & Lindsay Const. Co., Fargo, N. D. (contract)	$386,105.86
2 C. A. Wagner Const. Co., Sioux Falls, S. D.	448,302.73
6 J. H. Beckman Const. Co., Sioux Falls, S. D.	484,463.31
Engineer's estimate	451,761.31

Items		Quantity	Unit prices 1	C	2
Clear trees					
6" to 18" diam	ea	14	$5	00	$5.00
over 18" diam	ea	14	8	00	7.00
Clear, all other	ls		100	00	350.00
Oblit old road	lf	7,230		10	.20
Seeding	ac	192.52	14	00	15.00
Excav, uncl	cy	1,456,412		14	.165
For struct	cy	2,850		25	1.50
Overhaul	cy Stas	904,970		01	.005
Water for compact	Mgal	8,322	1	00	1.50
Cr grav surf, ip	T	37,656	1	20	1.45
RC pipe flared end sections, 15"	ea	10	20	00	23.30
18"	ea	93	22	50	26.65
24"	ea	18	33	50	36.40
30"	ea	16	50	00	53.00
36"	ea	14	90	00	88.00
42"	ea	8	120	00	117.25
48"	ea	12	130	00	138.00
54"	ea	2	165	00	173.45
60"	ea	4	200	00	214.55
72"	ea	6	270	00	282.15
RC cattle pass, fl end sect, 4' x 6'	ea	10	285	00	312.00
RC sect'l cattle pass	lf	234	29	00	34.65
RC pipe (3000D) 42"	lf	40	15	00	18.20
Reinf conc pipe					
42"	lf	804	15	00	18.35
54"	lf	158	18	50	20.55
60"	lf	214	23	00	25.80
15"	lf	48	3	25	3.20
18"	lf	3,094	4	00	3.90
24"	lf	1,000	5	00	5.90
30"	lf	1,036	7	25	8.70
36"	lf	786	9	50	11.70
42"	lf	654	12	50	15.70
72"	lf	378	32	00	34.95
72" (3000D)	lf	54	38	00	39.65
84"	lf	144	41	00	45.35
84" (3000D)	lf	54	47	00	51.85
CM plate pipe 90°	lf	100	45	00	31.10
114"	lf	82	50	00	37.25
Pipe culv					
Takeout 12"-30"	lf	1,554		75	1.00
Reset 15"-24"	lf	829.5	1	00	1.50
Incid work	ls		1,000	600	00



NOW—MAKE ANY PORTABLE GREASING RIG YOU WANT!

ALEMITE Portable Service Stations are S·E·C·T·I·O·N·A·L·I·Z·E·D

Now you can group *just the equipment you need* into one versatile rig for on-the-job lubrication! Whatever selection of chassis or gear-oil pumps and reels you require for 100-lb. drums, Alemite now combines them into a tailor-made Portable Service Station—exactly keyed to your needs.

No matter *how* far afield your equipment is working, every machine you operate gets faster, better lubrication *at lower cost!* Air-operated pumps deliver oil or grease direct from barrel to bearing, right on the job. Downtime for lubrication is cut. Lubricants are not exposed to dirt or dust. And you avoid costly bearing failures.

Any Portable Service Station you need can be easily assembled from these new, *sectionalized* Alemite units.

Other heavy duty pumps, reels and accessories are also available for 400-lb. and 54-gal. capacity drums.

WRITE TODAY for your *free*, illustrated catalog! Address inquiries to Alemite, Dept. G-100, 1850 Diversey Parkway, Chicago 14, Illinois.

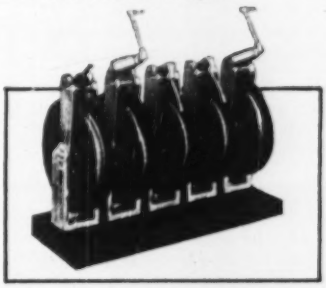
STEWART WARNER

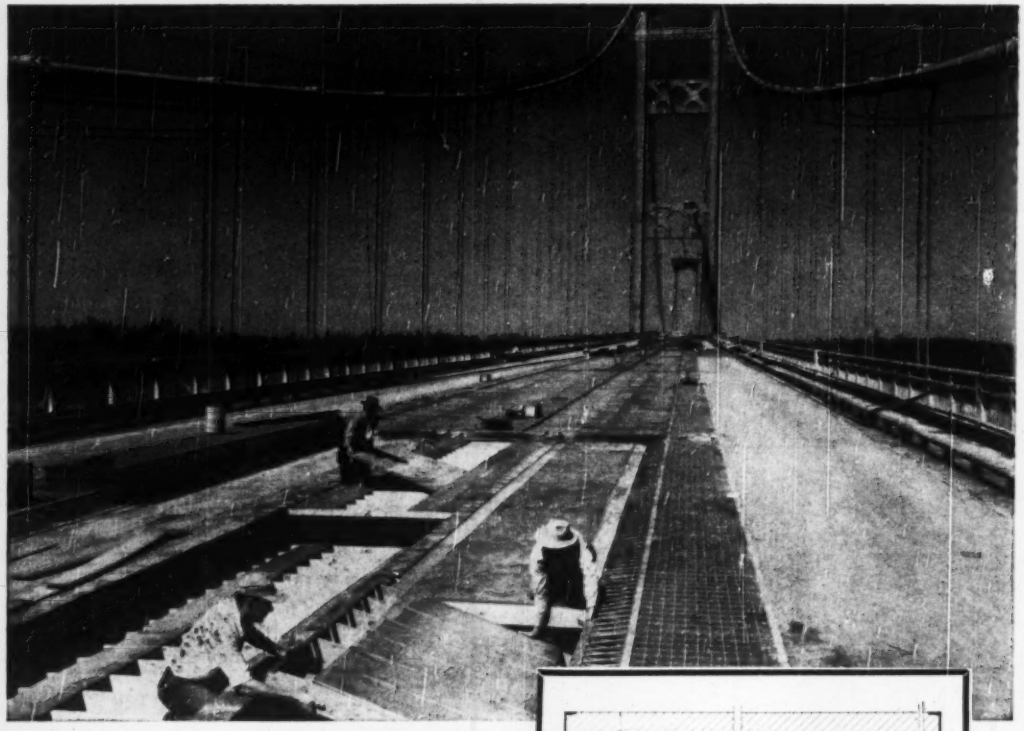
ALEMITE

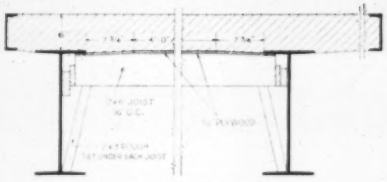
Pacemaker in Lubrication Progress

Alemite Pumps, air-operated, for delivering chassis grease and gear oil from 100-lb. drums. Available for individual or "group" installation.

Alemite Hose Reels for high and low-pressure delivery of chassis grease, gear oil, engine oil, air and water. Available in single or multiple units to suit any requirement.







Typical cross-section of roadway slab form. Entire roadway consists of four such sections and two sidewalk sections. The structure was built by the Washington State Bridge Authority. Charles E. Andrews, chairman and principal engineer. Dexter R. Smith was designing engineer. The new bridge replaces famed "Galloping Gertie"—lighter and narrower span which collapsed in a windstorm November 7, 1940.

On The New, Mile-Long Tacoma Narrows Bridge—

"Plywood Speeded Form Work All Along The Line"

THE MILE-LONG ROADWAY of the new Tacoma Narrows Bridge was formed against Douglas fir plywood because—in the words of Earl Starbard, job superintendent—"the forms had to be as tight as possible to prevent cement leakage, due to the great amount of steelwork below the road slab."

Starbard of Woodworth & Co., Tacoma, Washington—contractors for all concrete work—commented: "Plywood's large size reduced leakage to a minimum. That, plus the fact that plywood is light and easy to work, speeded form work all along the line."

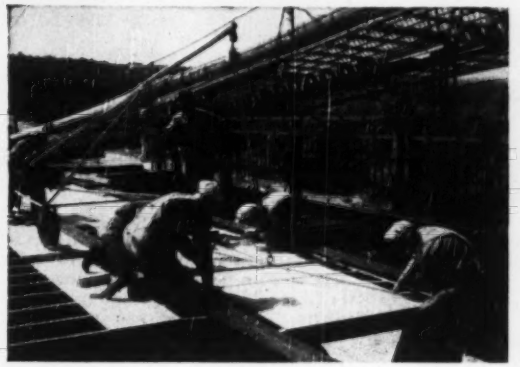
Yes . . . when it comes to concrete form work, Douglas fir plywood does the big jobs—the difficult jobs—with speed and efficiency.

Douglas Fir

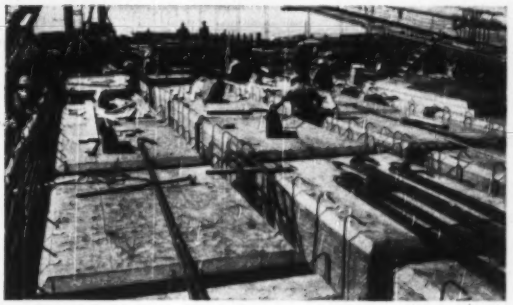
Plywood

AMERICA'S

Contractors Report 15% Savings With Plywood Concrete Forms!



Workmen placing plywood concrete forms lengthwise across 2" x 6" joists between steel I-beams, using a small movable boom designed by Woodworth & Co. engineers. The mile-long reinforced concrete road slab was formed against ¾" Exterior plywood form panels. After concrete was cured, plywood forms were stripped from beneath with a traveling crane.



In addition to its use for roadway forms, plywood was utilized as form material for all above-ground concrete on the anchors, viaducts, bents and two toll houses—to insure smooth, easily-finished concrete surfaces. Almost a third of a million square feet of Douglas fir plywood were used for the span's concrete form work. Shown above: plywood forms for entire floor section of the bridge approach—slabs, girders and beams.

Large, Light, Strong Real Wood Panels

For additional data on Douglas fir plywood for concrete form work, write: Douglas Fir Plywood Association, Tacoma 2, Washington. Of particular interest are two booklets: "Concrete Forms of Douglas Fir Plywood" and "Handling PlyForm".

BUSIEST BUILDING MATERIAL

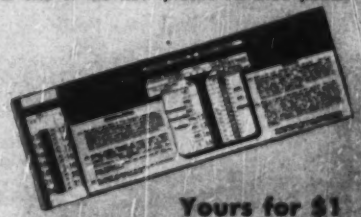
For Smooth, Fin-Free Concrete Surfaces...

PLYFORM

Concrete Form Panels

Genuine DOUGLAS FIR PLYWOOD PLYFORM CONCRETE FORM PANEL EXTERIOR TYPE GRADE B-B DFPA INSPECTED

Smooth, fin-free surfaces . . . ease of handling . . . strength, rigidity, tightness . . . superior nail holding qualities . . . cost-cutting re-use factors—these are primary advantages of PlyForm. Highly moisture-resistant glues used in PlyForm panels permit multiple re-use (as many as 10 to 15 are not unusual). For the greatest possible panel re-use, however, specify Exterior-type Concrete Form grade of Douglas fir plywood—bonded with completely waterproof phenolic resin adhesive. For special architectural concrete, requiring the finest possible finish, the architect or contractor may specify Exterior-type or Interior-type Douglas fir plywood in grades having "A" face veneer—or one of the new plastic-surfaced panels.



Yours for $1

New Kealy PlyForm calculator gives construction data for plywood forms, based on hourly rate of pour. Complete with leaflet, "Design Assumptions for New Kealy Calculator." Send coupon now!

DOUGLAS FIR PLYWOOD ASSOCIATION
TACOMA 2, WASHINGTON (Good in USA only)

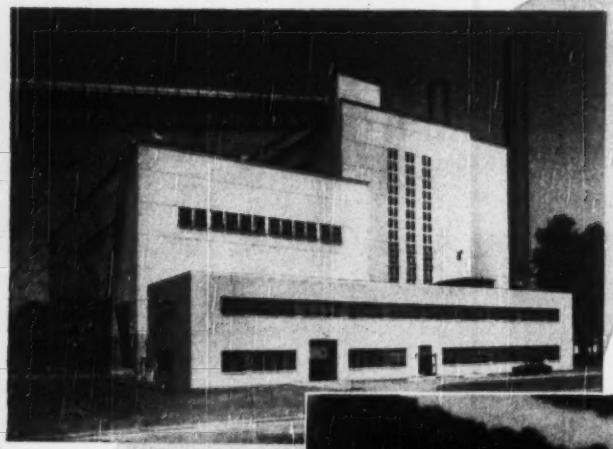
Please send me ..... Kealy Calculators. I enclose $1.00 each to cover costs.

Name .....

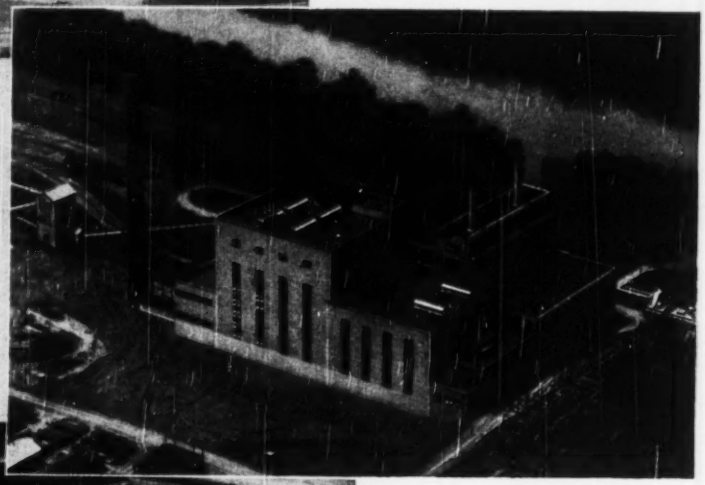
Address .....

City ..... Zone .... State .....

WITH THE NEED CAME THE POWER



Virginia Electric and Power Company instituted an expansion program in 1944 to more than double their electric generating capacity. These new power stations and extensions, three of which are illustrated here, are outstanding examples of efficient design for consistently reliable year-in, year-out, high-capacity performance. Facilities for this program, completed and in process of completion, will produce a total of approximately one-half million kilowatts. Design and construction are by Stone & Webster Engineering Corporation.



1. *Chesterfield Power Station, first with an installed rated capacity of 50,000 kw, has been extended with an additional installed rated capacity of 60,000 kw.*
2. *Recently completed Bremo Power Station extension, 60,000 kw rated capacity.*
3. *Possum Point Power Station where an extension of 60,000 kw rated capacity is under construction.*

VEPCO

STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Tenn., Memphis—B.A. About 11/1—Memphis Light, Gas & Water Comn., City Hall, pump. station bldg., 30 m. g. pumping capacity, and filter facilities. CD 8/8/49.

Tenn., Nashville—B.A. 11/2—E. B. Smith, city purch. agt., City Hall, electrification George Reyer Pumping Station, incl. removal Allis-Chalmers Crank and Flywheel Pump, furnishing, erecting 40 m.g.d. high and low service motor driven centrifugal pumps, with piping, valves, accessories; motorizing 3 steam turbine driven DeLaval centrifugal pumps, etc. furnishing, erecting electrical control equip. and accessories. Plans deposit $25. The Chester Engineers, 210 East Park Way, Pittsburgh 12, Pa., engrs.; CD 1/17/49.

Calif., Clyde—B.A. 11/6—California Water Service Co., 374 West Santa Clara St., Mallard Filter Plant addns., incl. 2 rapid sand filters, 2 rein.-con. basins, piping, etc., near here. Approx. $28,000. Plans deposit $10.

Ont., Kingston—B.A. 11/6—A. E. Stansbury, chn. Public Utilities Comn., Kingston, water purification plant. Approx $250,000. Plans deposit $50. Gore & Storrie, 1130 Bay St, Toronto, engrs. CD 7/3/46.

N. D., Fargo—B.A. 11/8—City, City Hall, 619 N. P St., water treatment plant. $500,000. Pfeifer & Shultz, 702 Wesley Temple Bldg., Minneapolis, Minn., engrs.

▲ N. D., Minot—B.A. 11/8—City, J. W. Bliss, mgr., Minot, approx. 125x170 ft., sub-bsmnt. water treatment plant, sewerage sys. imprvs., approx. 13,770 lin. ft. external piping etc. $1,200,000. Pfeifer & Shultze, 702 Wesley Temple Bldg., Minneapolis, engrs. CD 1/6.

LOW BIDDERS

▲ La., New Sarpy—St. Charles Parish Waterworks Dist. 1, Oct. 9, water supply sys., water treatment plant, from Perrilliat & Rickey Constr. Co., Inc., 1530 S. Rendon, New Orleans, $301,000***c.i. pipe, from Sullivan, Long & Hagarty, Bessemer, Ala., $525,707***water dist. transit pipe, from Farnsworth & Chambers Co., Box 74, Houston, Tex., $536,197***water tanks, from R. D. Cole Mfg. Co., Newman, Ga., $48,400. CD 9/27.

▲Okla., Tulsa—City, City Hall, Oct. 13, construct upper Spavinaw Dam near Jay, from Guy H. James, First Natl. Bldg., Oklahoma City, Zone 2, $2,407,505. Est. $2,500,000. CD 9/15.

Tex., Waskom—City, Oct. 11, WW, from J. D. George Co., 707 Amicable Bldg., Waco, $51,227. Allied Engineers, Fort Worth Natl. Bank Bldg., Fort Worth, engrs.

Tex., Wolfe City—City, Oct. 6, WW, from W. C. Tucker & Son, Route 6, Box 101, Fort Worth $31,000. Est. $45,000. CD 9/26.

CONTRACTS AWARDED

Tex., Austin—University of Texas, Bd. of Regents, University Bldg., central water chilling and distr. facilities, to R. O. Davis, Inc., Box 150, $549,306. Bids 9/28. CD 10/3, under LB.

Tex., San Angelo—City, c.i. water lines, $100,000; concrete ground storage, $65,000, force account. CD 2/2.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Mich., Detroit—B. A. 10/31—City, Dpt. P. Wks., 104 City Hall, Contr. PW 1404, public sewer in Fullerton and W. Parkway Aves. from Schoolcraft Ave. to Alley East of Telegraph Rd.; Contr. PW 1405, public sewer in Hessell Ave. from Hubbel Ave. to Alley East of Greenfield Ave. G. R. Thompson, Griswold Bldg., city engr. CD 11/30/44.

O., Cincinnati—B.A. 10/31—At office W. R. Kellogg, city mgr., at Dpt. P. Wks., City Hall, construct Little Miami Sewage Works, Contr. No. 3. Plans deposit $25. CD 7/18.

Ala., Florence—B.A. 11/1—City, sanitary sewer imprvs. incl. 38,990 ft. 8- to 12-in. vitr clay and c. i. pipe. Plans deposit $25. Vernon P. Crockett, Liberty Bldg., Sheffield, engr.

Ga., Atlanta—B.A. 11/1—Fulton Co., Court House sanitary sewers in Alta, Charlotte, Emily, Jetal, Louise and Mildred Places, Arlington Circle and Markone St. Plans deposit $15.

Ore., Portland—B.A. 11/1—City, City Hall, lateral sys. for Grand Avenue unit of sewage proj. Plans deposit $25. L. G. Apperson, city engr. CD 7/20/45.

Tex., Centerville—B. A. 11/2—City, Harris Campbell, mayor, Centerville, sanitary sewers, sewage treatment plant, $70,000. Plans deposit $15. Joe J. Rady, 811 Insurance Bldg., Fort Worth, engr.

Tex., Buffalo—B. A. 11/3—City, H. H. Lyon, mayor, Buffalo, sanitary sewers, sewage treatment plant, $70,000. Plans deposit $15. Joe J. Rady, 811 Insurance Bldg., Fort Worth, engr.

Wash., Tacoma—B.A. 11/6—City, City Hall, 27 mgpd primary treatment plant. Approx. $50,000. Plans deposit $15 D. E. Morris, city engr. CD 11/20/44.

Fla., Cocoa—B.A. 11/7—City, sanitary sewerage facilities, incl. 2 sewage lift stations, 1 sewage treatment plant, 7,500 ft. vit. clay pipe and 5,500 ft. c.i. pressure lines, appurtenances. Plans deposit $15. Smith & Gillespie, P.O. Box 1048, Jacksonville, Zone 1, engrs.

LOW BIDDERS

Calif., Jamestown—Jamestown Sanitary Dist., Jamestown, Oct. 4, sewage disposal works, from Beerman & Jones, Sonora, Schedule 1, $73,200. CD 9/20.

Calif., Los Angeles—Los Angeles Co. Sanitation Dist. 2, 120b S. Maple Ave., Oct. 9, 7,000 ft. 39 and 48 in. pipe, Joint Outfall "D" portion of Unit 4 and 5, in Terrance, from Robert Vlacich, 2901 Worthen Ave., $97,679. CD 9/22.

Calif., Los Angeles—Los Angeles Co. Sanitation Dist. 18, 120b S. Maple Ave., Oct. 9, Whittier Outfall Trunk Sewer, Sect. 4 and 5, Whittier, from Bebek & Brkich, 5025 E. Slauson St., $157,551.

Calif., Los Angeles—Los Angeles Sanitation Dist. 19, 120b S. Maple Ave., Oct. 9, Palos Verdes Trunk Sewer Long Beach, from Artukovitch Bros., 7320 N. Atlantic Blvd., Paramount, $155,176.

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, Oct. 10, 3.27 mi. sanitary sewers in Hermosa Dr., Temple City, C.I. 1289, from Papac Constr. Co., 604 N. Montebello Blvd., Montebello, $64,455. Est. $69,050. CD 9/22.

▲ Ore., Portland—City, City Hall, Oct. 11, 2 mi. Grand Avenue interceptor unit of sewage disposal sys., from Kuckenberg Constr. Co., 11104 N.E. Holman St., $1,701,845. CD 9/19.

Tex., Fort Worth—City, City Hall, Oct. 5 sanitary sewers, Meadowbrook Country Club area, from Richardson Constr. Co., 3236 Townsend St., $53,486. CD 10/2.

Tex., Waskom—City, Oct. 11, sanitary sewers from J. D. George Co., 707 Amicable Bldg., Waco, $67,816. Allied Engineers, Fort Worth Natl. Bank Bldg., Fort Worth, engrs.

Tex., Wolfe City—City, Oct. 6, sanitary sewerage sys. exten. imprvs., from W. C. Tucker & Son, Route 6, Box 101, Fort Worth, $53,464. Est. $55,000. CD 9/26.

CONTRACTS AWARDED

Calif., West Sacramento—West Sacramento Sanitary Dist., West Sacramento, sewage treatment plant, to Affiliated Engineers Contractors, Inc., Chamber of Commerce Bldg., Sacramento, $127,174. Bids 10/6. CD 10/3, under LB.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada; are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

Tex., Edinburg—City, sanitary sewer lines in areas inside city limits, $80,000; sanitary sewer main and laterals in areas outside city limits, $50,000, own forces. Jack Ellingson, city engr. CD 3/33.

Tex., Livingston—City, sanitary sewers, own forces, $60,000. CD 6/9.

BRIDGES

LOW BIDDERS

New Jersey—State Hy. Dpt., State House Annex, Trenton, Oct. 10, constr. 2 bridges on new Palisades Interstate Parkway at Tenafly, Bergen Co., from Ell-Dorer Contg. Co., 644 Nye St., Irvington, $199,105. CD 9/19.

New York—Bureau Contracts & Accounts, Albany, Oct. 11, received no bids 5 span 600 ft. plate girder bridge carrying Utica St. over Oswego River in city of Oswego, etc., Oswego Co., est. $957,995, CD 9/20, raising 2 bridge structures at Aurora St. and Bridge 1 (Broadway) over Cayuga Creek in the village of Lancaster; incl. 0.05 mi. c. conc.; 0.12 mi. of b. con. pavement and misc. work 0.04 mi. (Lancaster), Erie Co. from A. K. Van Ingen, 87 Evans St., Hamburg, $135,435, est $148,402. CD 920, under Streets and Roads.

CONTRACTS AWARDED

▲La., New Orleans—City Purchasing Div., City Hall, overpass on Franklin Ave. at Florida Ave., Proposal 1510S and underpass at Franklin Ave. at Benefits St., Proposal 1510s, to Kelley Genares, 7900 Palm St., $1,065,000 and $845,000 respectively. Bids 9/27, awarded 10/10. CD 10/3, under L.B.

Tennessee—State Hy. Dpt., Nashville, Cumberland River Bridge between Gallatin and Lebanon, Wilson and Sumner Counties to J. M. Hickman Constr. Co., Harriman, $614,114. CD 9/12.

Washington—State Hy. Dpt., Olympia, 5 mercury vapor multiple circuits and incandescent series circuits for illumination sys. on Columbia River bridge at Wenatchee, Chelan and Douglas Counties, to Electric Constr. Co., 1650 Center St., Tacoma, $50,397. Bids 10/10. CD 9/26.

STREETS AND ROADS

LOW BIDDERS

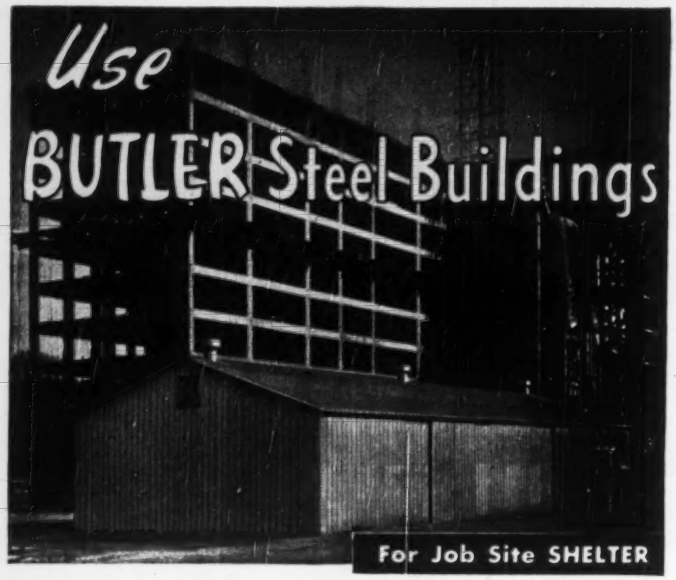
California—State Div. Hys., Sacramento, Oct. 11, c. conc. on cement treated subgrade surf., portions with plant mix, on untreated rock base, imported base material and constr. 2 bridges between Tulare and Tagus, 7.11 mi., Tulare Co., from United Concrete Pipe Corp., Box 425, Baldwin Park, $895,580. CD 9/19.

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, imprv. 5,250 lin. ft. 120 St., Hawthorne CC 0-683, from Vido Kovacevich, 5300 Imperial Hy., South Gate, $79,090.

Calif., Los Angeles—Bd. Supervs. Los Angeles, 501 Hall of Records, Oct. 10, 10,651 ft. Imprv. Racine Ave., C. I. 1313, Hollydale, from Vido Kovacevich Co., 5300 Imperial Hy., South Gate, $57,957. Est. $72,210. CD 9/27.

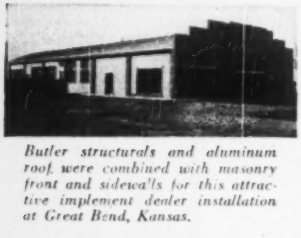
Maryland—State Rds. Comn., Baltimore, Zone 2, Oct. 10, crusher-run sub-base, macad. base course, b. conc., base, wedge, leveling, surf. course grading, drainage, wid'n. resurf. 6.719 mi. Lappans-Sharpsburg Rd., State Rte. 65, Contr. W 299-1-615, Washington Co., from American Asphalt Products Co., Friendship Airport, and Arthur A. Mackie Constr. Co. 3301 Ridgewood Ave. Baltimore, $763,327***p. conc., b. conc. surf., track relocation, grading, drainage, surf. 0.989 mi., Frederick Rd., Catonsville from 350 ft. E. of Ingleside Ave. to Montrose Ave., U. S. Rte. 40, Contr. B 582-415, F. A. Proj. U 136 (2), Baltimore Co., from P. Reddington & Sons, 2 E. Lexington St., Baltimore, Zone 2, $255,890*** macad. base course, b.t. conc. wid'n. base, surf. courses, lowering vertical curves and resurf. 2 mi. York Rd. from Joppa Rd., Towson to Cockeysville, U. S. Rte. 111, Baltimore Co., from Wm. A. Harting, 2930 Hammonds Ferry Rd., Lansdowne, stone $219,010, slag $220,680. CD 9/28 and 9/26.

▲ New York—Bureau Contracts & Accounts, Albany, Oct. 11, construct Ontario Thruway (Part Byron to Jordan) incl. grading, with fdn. course on gravel 6.63 mi. of Thruway; bit. tr. gravel 1.92 mi. and b. conc. 0.75 mi. on intersecting and marginal roads, incl. 4 bridge structures, and a closed box culvert with the necessary grading and drainage, Cayuga and Onondaga Counties from Tomlinson Constr. Co. Ltd., 21 King St., Toronto, Ont., $1,771,820, est. $2,204,600 ***b. conc. 0.41 mi. in hamlet of Springwater on Route 15, incl. 2 closed box concrete culverts and necessary grading and drainage, Livingston Co., from Cold Springs Constr. Co. Inc., Akron, $133,605, est. $159,000***b. conc. 3.18 mi. of 20 ft. wide on Fowler Rd., exten. easterly from Inverness Dr. town of York to point just east of Genesee River in town of



140'x100' Butler Building used by Patti Construction Company as job site shelter. Project is huge Twin Oaks apartment building installation in Kansas City.

Masonry front, display windows of Visalia, California, pump repair shop show adaptability of Butler Buildings in meeting clients' special needs.



Butler structurals and aluminum roof were combined with masonry front and sidewalls for this attractive implement dealer installation at Great Bend, Kansas.

Yes . . . Butler Buildings provide the low cost answer to your job site shelter needs and for your *permanent* quarters. Recommend Butler Buildings to your clients . . . for more profits to you. Butler Buildings are fire-safe . . . weathertight . . . and easily adapted to practically every building need. They're structurally strong, for longer life service. Ready for use in days instead of weeks. Available in a wide range of widths . . . 20′, 24′, 28′, 32′, 36′, 40′, 48′, 50′ and on up.

It will pay you to get acquainted with your local Butler distributor.

BUTLER

BUTLER MANUFACTURING COMPANY

Kansas City, Mo.
Galesburg, Ill.
Richmond, Calif.
Minneapolis, Minn.

MAIL THIS COUPON TODAY!

For Prompt Reply, Address Dept. NR210 at Office nearest You:
7418 E. 13th St., Kansas City 3E, Mo.
918 6th Ave., S. E., Minneapolis 14, Minn.
Richmond, Calif.

☐ *Send information on Butler Steel Buildings for use as job site shelters.*

☐ *Tell me how I can profit by adapting Butler Buildings for customers' use.*

Name .....

Firm .....

Address .....

City ..... Zone ..... State .....

Avon, incl. 3 span 300 ft. cantilever I-beam bridge over Genesee River, Livingston Co., from Potter DeWitt Corp., Pavilion, $402,503, est. $442,000***construct 1.64 mi. North Goodman St. and its exten., from Norton St. in city of Rochester, exten. northerly to Titus in town of Irondequoit, incl. 0.73 mi. b. conc. pavement and 0.86 mi. bit. macad., etc. Monroe Co., from Rocell Constr. Co., Inc., 116 Petrossi Dr., and A. E. Petrossi, Inc., 2401 St. Paul Blvd., both of Rochester, $383,043, est. $423,000***reconstruct with 24 ft. wide, c. conc. Campbell Bath State Hy. (Route 15) in town of Bath, exten. northwesterly from Mud Creek near village of Savona 2.02 mi. to point just north of intersecting dirt road in that locality, incl. 0.16 mi. b. conc. pavement and 0.01 mi. of misc. work. Steuben Co., from Berg Eng. & Constr. Corp., McKinley Bldg., Buffalo, $402,227, est. $459,000***construct 7.77 mi. Catskill Thruway (Kingston-Saugerties) with variable width c. conc. 3.18 mi. of intersecting roads, 5 bridge structures and 0.15 mi. misc. work Ulster Co., from Lane Constr. Corp., 37 Colony St., Meriden, Conn., $3,659,497, est. $4,880,000***reconstruct 4.98 mi. Route 17 (Vestal-Binghamton) with twin concrete arteries 24 ft. wide, 0.23 mi. misc. work, etc., Broome Co., from Binghamton Constr. Co., Inc., Marine Midland Bldg., Binghamton, $687,183, est. $732,000*construct with 16-18 ft. bit. macad. pavement on Town Hy. Connection Roads exten. northeasterly along north side of Pepacton Reservoir from point just east of Raynor Brook to connect to Huntley Hollow, Terry Clove, Fall Clove and Murphy Hill Town Highways, 7.16 mi. in Town of Colchester, etc., Delaware Co., from Dan Bar Contg. Co., Inc., 220 Pulaweski St., Syracuse, $1,073,992, est. $1,130,000***reconstruct with variable width b. conc. pavement on Bloomingburg-Monticello Hy. (Route 17) exten. easterly from point west of Neversink River, approx. 1.18 mi. in town of Thompson, incl. 0.98 mi. b. conc. pavement, misc. work 0.2 mi. and construct 4 span bridge over Neversink River. Sullivan Co., from Serafini Constr. Co., Inc., Conklin Rd., Binghamton, $832,930, est. $1142,000*** reconstruct portion Bridgehamoton-Devon Hy. with 24 ft. b. conc. pavement exten. eastwardly from point at town line between East and South Hampton 1.56 mi. to point in village of East Hampton west of Georgica Rd., etc., Suffolk Co., from J. J. Hagerty, Inc., Rogers Ave., Westhampton Beach, $195,743, est. $202,000. CD 9/20.

Okla., Oklahoma City—City, City Hall, Oct. 10, wid'n., resurf. May Ave. from N. W. 27 to N. W. 54, from Pennington & Winter, Apco Tower, Zone 2, $283,-363. Est. $283,726. H. E. Chase, city engr.

Okla., Shawnee—Pottawatomie Co., Shawnee, rejected bids Sept. 27, grading, drainage, 225 mi. roads, L. B. $910,000. Est. $800,000. CD 9/20.

Texas—State Hy. Comn., Austin, cancelled bids to have been opened Oct. 18, fdn. course, one course surf. tr. 5.941 mi. Hy. F. M. 749, from S. H. 70, 10.5 mi. south of Pampa to Bowers City, Control No. R 310-4-2. CD 10/5.

CONTRACTS AWARDED

Calif., San Leandro—Alameda Co., Court House, Oakland, grading, site preparation for Juvenile Hall site, to Swinerton & Walberg, 225 Bush St., San Francisco, $79,344. Awarded 10/3. Kent & Haas, 525 Market St., San Francisco, archts.

Connecticut—State, State Office Bldg., Hartford, imprv. roads Wallingford, to Brunalli Constr. Co., 19 Main St., Southington, $86,989.

New York—Bureau Contracts & Accounts, Albany, 6.94 mi. Northern State Parkway in North Hempstead, Nassau Co., to Mt. Vernon Contg. Co., 439 N. Terrace Ave., Mt. Vernon, $696,325. Bids 8/23. CD 8/25, under LB.

† Texas—U. S. Eng., Box 61, Tulsa, Okla., road surf. Lots 1 and 2, CIVENG 34-066-50-159, to W. Ray Wible, Sherman, $74,089.

Tex., Lufkin—City, street imprvs., surf., force account, $75,000. CD 9/30/49.

Washington—State Hy. Dept., Olympia, clearing, grading, draining 2.821 mi. Primary State Hy. 1, Barnes Park north F. A. P. Nos. FI-001-1 (8) and FI-001-2 (2), Cowlitz and Lewis Counties, to Florito Bros., 1100 Leary Way, Seattle, $398,258; b. conc., constr. rein. conc. girder bridge over Bells Creek on 0.625 mi. Primary State Hy. 1, F. A. P. F. 026-1 (4), Whatcom Co., to C. C. Wilder, Bellingham, $79,535. Bids 10/10. CD 9/26.

Wisconsin—State Hy. Comn., Madison, grav. or crushed stone surf. 24 mi. Mosinee-Elderson Rd., S. T. Hy. 153, A. F. E. No. 37-015, Marathon Co., to James Peterson & Sons, Medford, $99,600. CD 9/14.

EARTHWORK, WATERWAYS

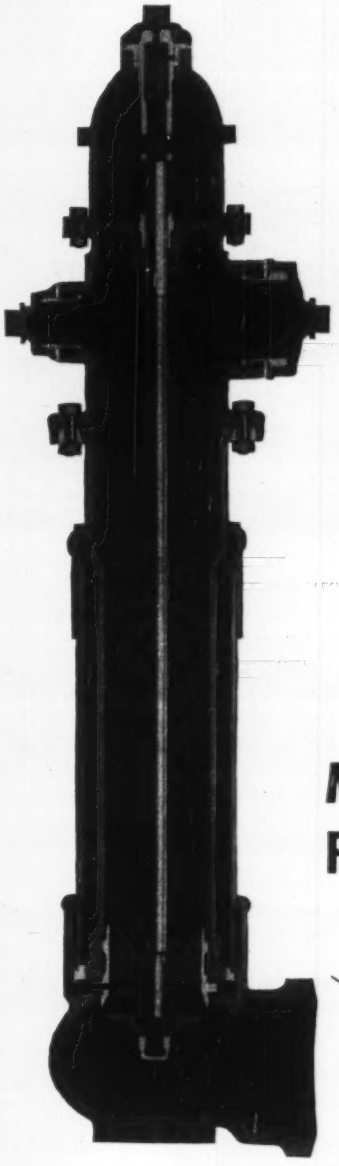
BIDS ASKED

† Conn., Winsted—B.A. About 10/31—U. S. Eng., P. O. Box 2316, Boston 7, Mass., channel imprv. Mad River, CIVENG 19-016-51-13. CD 8/2/44.

† Kansas—B. A. 10/31—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., constr. residence and maintenance facilities bldg. at Cedar Bluff Dam, Missouri River Basin Proj., Spec. R7-157 (Region 7), L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

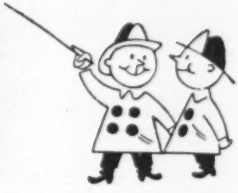
† Minnesota—B.A. 10/31—U. S. Eng., 1217 U. S. P.O. and Custom House, St. Paul, Zone 1, removal fill at upstream end of Esplanade, Lock and Dam 8, Mississippi River, CIVENG 21-018-51-19.

(Continued on page 79)



MATHEWS HYDRANTS

MECHANICAL JOINT PIPE CONNECTIONS, TOO



Because more and more people are using the mechanical joint pipe, it seems advisable to remind our customers that we supply hydrants with this type of connection—gate valves also.

Made by R. D. Wood Company

Public Ledger Bldg., Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

THE FIREMAN'S FRIEND

MATHEWS MODERNIZED HYDRANTS SET THE PACE: All working parts contained in replaceable barrel • A broken Mathews can be replaced with spare in a jiffy, without excavating Stuffing box cast integral with nozzle section • Head can be turned 360° • Replaceable head Nozzle sections easily changed • Nozzle levels raised or lowered without excavating • Protection case of "Sand-Spun" cast iron for extra strength, toughness, elasticity • Operating thread only part to be lubricated • A modern barrel makes an old Mathews good as new

Get a better day's work out of your Truck Dollar

CHEVROLET TRUCKS

CHEVROLET

You invest money in a truck to *get work done.* And you can prove to your own satisfaction that a Chevrolet truck does more work for every dollar you put into it.

You get *more for your money* right from the start, because your Chevrolet truck is priced at rock bottom. Chevrolet volume production—far and away the biggest in the truck field—makes possible extra features and extra engineering advantages at lowest cost.

You get *more for your money* every driving mile, because Chevrolet trucks are economical to operate. The top-rated efficiency of Chevrolet Valve-in-Head engine design saves money on gas and oil day in, day out.

You get *more for your money* right through the years, because your Chevrolet truck cuts upkeep to the bone. Hypoid rear axles, diaphragm spring clutch, ball-type steering and many other great truck features help keep your truck on the job and out of the shop.

Get the full "more-work-per-dollar" story from your Chevrolet dealer—and get America's biggest selling, best performing truck: Chevrolet.

CHEVROLET MOTOR DIVISION, *General Motors Corporation*
DETROIT 2, MICHIGAN

These Great Features Help Tell Why
CHEVROLET TRUCKS
ARE THE FIRST CHOICE OF
TRUCK BUYERS EVERYWHERE

TWO GREAT VALVE-IN-HEAD ENGINES: the new Loadmaster and the improved Thriftmaster—to give you greater power per gallon, lower cost per load • THE NEW POWER-JET CARBURETOR: smoother, quicker acceleration response • DIAPHRAGM SPRING CLUTCH for easy-action engagement • SYNCHRO-MESH TRANSMISSIONS for fast, smooth shifting • HYPOID REAR AXLES—5 times more durable than spiral bevel type • DOUBLE-ARTICULATED BRAKES —for complete driver control • WIDE-BASE WHEELS for increased tire mileage • ADVANCE-DESIGN STYLING with the "Cab that Breathes" • BALL-TYPE STEERING for easier handling • UNIT-DESIGN BODIES—precision built.

(Continued from page 76)

† **Indiana**—B.A. About 11/1—U. S. Eng., 830 W. Broadway, Louisville, 3. Ky., Blue River Levee Repairs, Shelby Co., CIVENG -15-029-51-38, and Honey Creek Levee Repairs, Vigo Co., CIVENG -15-029-51-44. CD 4/21/44.

† **Florida**—B.A. About 11/2—U. S. Eng., 575 Riverside Ave., Jacksonville, Zone 1, levee cross-section and paving Lakeside slopes and crown of Sect. 2 Lake Okeechobee Levees, Central and South Florida, Flood Control Proj., CIVENG—08-123-51-7. CD 6/9/44.

† **Pennsylvania**—B.A. About 11/2—U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore 3, Md, clearing and snagging project, Milton, along the left (easterly) bank of the West Branch of Susquehanna River and on islands in the River, Northumberland Co., Serial No. CIVENG 18-020-51-2.

† **Montana**—B.A. 11/9—Bureau Reclamation, Bldg. 1 A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Coram, one control for three 96 in. ring follower gates, incl. cabinet, cabinet piping, selector valve, auxiliary equip., electric equip. for Hungry Horse Dam, Hungry Horse Proj., Spec. DS 3212.

† **Oregon**—B.A. 12/1—U.S. Eng., 19 E. Poplar St., Walla Walla, Wash., fish collection system pumps and motors for McNary Dam. Inv. No. CIVENG 45-164-51-24.

LOW BIDDERS

† **Colorado**—Bureau Reclamation, Dpt. Interior, Grand Junction, Oct. 5, six concrete flumes on Highland Canal, Grand Valley Proj., Spec. 3180, from James Constr. Co., Artic Bldg., Seattle, Wash., $285,383, Est. $267,890. CD 9/13.

† **Tex., Roma**—International Boundary & Water Comn., U. S. A. and Mexico, United States Sec. 627, First Natl. Bank Bldg., Box 1859, El Paso, Oct. 5, penstocks and outlet pipes for Falcon Dam Proj. on Rio Grande River, near here, Spec. 4304, from A. O. Smith Corp., M. Esperson Bldg., Houston, $410,000. CD 9/5.

CONTRACTS AWARDED

Michigan—State Hy. Dpt., State Bldg., Lansing, Zone 13, 1.063 mi. excav. to change channel course, Paw Paw River for relocation of Rt. US 31, Proj. M 11-9 C 11, Berrien Co., to Alpine Constr. Co., St. Ignace, $40,293. Bids 9/28. CD 9/20.

AIRPORTS

BIDS ASKED

Tex., Bonham—AIRPORT—B. A. 11/1—City airport imprvs., paving, grading, drainage for runway. $50,000. Freese & Nichols, 407 Danciger Bldg., Fort Worth, engrs.

PUBLIC BUILDINGS

BIDS ASKED

▲ **Ill., Carbondale**—LIBRARY—B. A. 11/2—State, State Capitol, Springfield, library bldg. for Southern Illinois University. $1,647,000. C. Herrick Hammond, Springfield, state archt. CD 5/12/44.

Calif., Los Angeles—LAUNDRY—B. A. 11/8—Bd. Supervs. Los Angeles Co., 501 Hall of Records, laundry addns. at Rancho Los Amigos, Hondo. $124,000. Bids 9/26, rejected; L. B. $142,700. CD 9/7.

Calif., Berkeley—SCHOOL—B. A. 11/9—State Div. Architecture, P. Wks. Bldg., Sacramento, (1) general (2) heating and ventilating (3) plumbing (4) electrical work, 3 story 28,300 sq. ft., rein.-con. Unit 4 bldg. for California School for Deaf. Plans deposit $25. Anson Boyd, Sacramento, state archt. CD 8/30/45.

Calif., Riverside—OFFICE—B. A. 11/9—State Div. Architecture, P. Wks. Bldg., Sacramento (1) general (2) heating and ventilation (3) plumbing (4) electrical work for 1 story 12,100 sq. ft., rein.-con. Department of Employment Branch office. Plans deposit $25. Anson Boyd, Sacramento, state archt.

Calif., Sacramento—PUBLIC WORKS—B. A. 11/9—State Div. Architecture, P. Wks. Bldg., Sacramento, (1) general (2) electrical work (3) plumbing (4) heating-air-conditioning (5) elevators, 180,000 sq. ft., rein.-con., steel frame Public Works Bldg. Annex. Plans deposit $75. Anson Boyd, Sacramento, state archt.

Calif., Santa Maria—ASSEMBLY and EXHIBIT—B. A. 11/9—State Div. Architecture, P. Wks. Bldg., Sacramento, 200x80 ft. steel, rein.-con. combined assembly and exhibit bldg., 41x100 ft. National Guard Armory, for 37th District Agricultural Assn. Plans deposit $25. Anson Boyd, Sacramento, state archt.

▲† **N. M., Los Alamos**—BUILDINGS—B. A. 11/9—U. S. Atomic Energy Comn., Los Alamos, Group 140-TA-16, Proj. F, concrete buildings, Inv. No. 291-51-25. $1,000,000-$1,250,000. Plans deposit $50. Extended date. CD 9/21.

▲ **Tex., Amarillo**—HIGH SCHOOL—B. A. 11/14—Amarillo Independent School Dist., Amarillo, 1 and 2 story, 120,000 sq. ft. structural iron frame Junior High School, concrete pier and beam fdn. etc., 1 freight elevator. $1,500,000. Plans deposit $50. Extended date. Emmet F. & Jas. F. Rittenberry, 1000 Fisk Bldg., Amarillo, archts. CD 10/6.

N. C., Jackson—HIGH SCHOOL—B. A. 11/21—Northampton Co., Jackson, high school. Plans deposit $25. George R. Berryman, Insurance Bldg., Raleigh, archt.

CLECO
RC-80 AIR-OPERATED
PAVING BREAKERS

HERE'S WHAT CONTRACTORS SAY:

"... these breakers are the finest we have ever used."
"... greater output per man-hour."
"... eliminates four o'clock fatigue."
"... less maintenance than any other busters we've ever had."

CLECO AIR TOOLS

WRITE FOR BULLETIN RC-949

CLECO DIVISION
of the REED ROLLER BIT COMPANY
5125 Clinton Drive Houston 20, Texas

dewater the Complete way

When the going gets wet—call on "Complete"! We have the proven equipment, the successful experience and the cooperative personnel to keep you on firm ground. Remember this—only "Complete's" patented fluted wellpoint provides Complete assurance of constantly dry ground at all times.

Write today for "Complete" catalog Dept. ER

COMPLETE MACHINERY & EQUIPMENT COMPANY, INC.
36-40 11th STREET
LONG ISLAND CITY, N. Y.

Branch Warehouse
3rd AVE. & ADAMS ST.
GARY, INDIANA

COMPLETE WELLPOINT SYSTEMS
FOR SALE OR RENT

construction
STEEL
Quick Delivery

Nearby Stocks Include:
REINFORCING BARS and accessories
STRUCTURALS—channels, angles, beams, etc.
PLATES—sheared and U. M., Inland 4-Way Floor Plate
SHEETS—many types & coatings
TUBING—incl. welded structural
EXPANDED METAL—std. & flattened
STEEL SPIRALS, CAISSON RINGS, ETC.

RYERSON

Joseph T. Ryerson & Son, Inc. Plants at: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco.

What Liddicoat means to you

The Liddicoat detachable rock bit is consistently providing top performance for the mining and contracting industry. Designed and developed for low cost drilling operation, Liddicoat, pioneer in the field of single use bits, leads the field in outstanding service, cost reduction and efficient procedure in drilling operations. The key to Liddicoat's success is in performance.

Full Information and engineering service upon request.

Manufactured for sale in 11 western states, the Philippines and Alaska by Western Rock Bit Manufacturing Co. 552 West 7th South, Salt Lake City.

WESTERN ROCK BIT MANUFACTURING CO.

Manufactured for sale in the 37 eastern states by Calumet & Hecla Consolidated Copper Company of Calumet, Michigan.

CALUMET & HECLA CONS. COPPER CO.

LOW BIDDERS

Ill., Carbondale—INDUSTRIAL EDUCATION—State, State Capitol, Springfield, rejected bids Sept. 15, general contract industrial education bldg., completion physical education wing and life science bldg. and animal bldg., both at Southern Illinois University. L. B. $795,000. CD 9/21, under LB.

Minn., Litchfield—HOSPITAL—Meeker County Hospital, R. Wagner, chn. of bd., Darwin, Oct. 4, general contract 3 story, bsmnt., penthouse, hospital, from Kraus-Anderson, Inc., 501 8 St. S., Minneapolis, $481,560. CD 9/8.

Pa., Clarks Summit—BUILDING—General State Auth., 18 and Herr Sts., Harrisburg, Oct. 11, general contract building for tubercular patients at Clarks Summit State Hospital, from Tabone & Barbera, 186 N. Main St., Pittston. $786,600. CD 9/28.

▲ Pa., Hollidaysburg—BUILDING—General State Auth., 18 and Herr Sts., Harrisburg, Oct. 11, general contract hospital incl. underground connecting tunnel or without the tunnel from McCloskey & Co., Tabor Rd., Phila., $1,485,000 or $1,393,000 respectively. CD 12/23/49.

▲ Pa., Mayview—BUILDING—General State Auth., 18 and Herr Sts., Harrisburg, Oct. 11, general contract building for female disturbed and semi-disturbed patients at Mayview State Hospital, from Allegheny Building Co., 899 Bingham St., Pittsburgh, $1,583,800; heating and plumbing, from George H. Saffel Co., 1700 Jane St., Pittsburgh, $337,400. CD 9/22.

▲ Wash., Seattle—SCHOOL—School Dist. 1, 815 4 Ave. N., general contract Casper W. Sharples Junior High School in southeast Seattle, from Poston Constr. Co., 2471 Aurora Ave., $1,667,870. CD 10/2.

CONTRACTS AWARDED

Md., Baltimore—SCHOOL—Baltimore Co., Bd. Educ., Susquahanna and Washington Aves., Towson, 1 story, part bsmnt., 185x300 ft., brick, cinder block, steel Maiden Choice School, Wilkens Ave. and Maiden Choice Lane, to Lawrence Constr. Co., 2503 St. Paul St., $572,777. Est. $500,000. CD 10/10, under LB.

Mich., Detroit—SCHOOL—City, Bd. Educ., 2 story, brick, steel Warren E. Bow School addn., Prevost and Pembroke Sts., to R. E. Dailey & Co., 9900 Northlawn St., $500,000. Awarded 8/1. C. William Palmer, 2663 Penobscot Bldg., archt. CD 8/25/44.

† Montana—SUB-STATION—Bureau Reclamation, Bldg. 1 A, Denver Fed. Center, Denver, Colo., constr. 30,000 kva Havre sub-station, to Lichty Constr. Co., and Brasel & Whitehead, Riverton, Wyo. $96,290. Bids 3/21, awarded 3/24. CD 3/28.

N. J., Toms River—SCHOOL—Dover Twp. Bd. Educ., Toms River high school, to Daley & Co., Inc., Fairview, $565,653. Bids 9/21. CD 10/4, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

N. C., Winston-Salem—CHURCH—B.A. 10/31—South Side Baptist Church, c/o Macklin & Stinson, archts., 226 N. Trade St., church addn. Plans deposit $25.

SOON LETS CONTRACT

Fla., Jacksonville — COMMERCIAL CENTER — Marsh & Saxelby, archts., Hilderbrand Bldg., Zone 1, soon lets contract commercial center, in Venetia Suburb at Roosevelt Blvd. and Timuquana Rd., for Buckman Ulmer & Mitchell, Inc., Buckman Bldg., Zone 2, Approx. $250,000.

Mass., Arlington—CHURCH—First Baptist Church, 819 Massachusetts Ave., Boston, soon lets contract, 25x78x 85 ft. brick, concrete, L-shaped church addn., $250,000. Knight & Hanna, 78 Chestnut St., Boston, archts. CD 9/22.

CONTRACTS AWARDED

Calif., Covina—HOMES—Foxdale Homes, Inc., 4131 N. Foxdale St., 64 frame, stucco homes, Nora, Lang and Orange Aves., Owner builds. $440,550.

Idaho, Boise—HOSPITAL—Sisters of Holy Cross, 412 State St., 3 story St. Alphonsus hospital addn., to Jordan & Sons, 406 S. 6 St., $566,720. Bids 9/21. CD 9/28, under LB.

"GUNITE"

NEW CONSTRUCTION AND REPAIRS

- Prestressed Tanks
- Repair all Types Disintegrated Concrete
- Dam Reconstruction and Repairs
- Linings and Repairs to Reservoirs, Stacks, Bunkers, Sewers, Tanks, Tunnels, Pen Stocks
- Structural Steel Encasements
- Restoration of Masonry Structures

Experienced Personnel

Write for our new 48 page Bulletin

PRESSURE CONCRETE CO.

Gunite Contractors and Engineers

193 Emmett Street So. Court Street
Newark 5, New Jersey Florence, Alabama
33 N. LaSalle St., Chicago 2, Ill.
Liberty Life Bldg., Charlotte, North Carolina

WELDING CONNECTORS

Saxe System Welded Connection Units for welded assembly

Saxe Units place in position and securely hold together structural parts to be welded.

As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.

Write for 58 pg. Manual containing full engineering design information for welded structures.

J. H. WILLIAMS & COMPANY

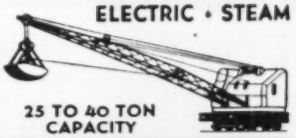
Buffalo-7, New York

Canadian Representatives

Air Reduction Canada, Ltd. Montreal 2, Canada

OHIO LOCOMOTIVE CRANES

GASOLINE • DIESEL ELECTRIC • STEAM



25 TO 40 TON CAPACITY

THE OHIO LOCOMOTIVE CRANE CO
BUCYRUS, OHIO

N. C., Charlotte—HOMES—Marsh Realty Co., c/o Louis H. Asbury & Sons, archts., 121 Brevard St., 25 duplex type homes, Sedgefield Rd. Owner builds. Approx. $375,000.

Tex., Houston—HOUSING—R. E. Boyker & Jack G. Vest, 3780 Robinhood St., addnl. housing units, west of Avenue A, Bellaire, near here. Owner builds. Approx. $275,000. CD 9/15.

INDUSTRIAL BUILDINGS

CONTRACTS AWARDED

Calif., Bell—FACTORY, etc.—Fabrican Products, c/o A. H. Cooke, engr., 3922 Sunol St., Los Angeles, 1 story, 150,000 sq. ft. factory and storage bldg., to W. P. Neil Co., 4814 Loma Vista St., Los Angeles, $360,000.

Ill., Centralia—FACTORY—Forest City Mfg. Co., 816 N. Poplar St., Centralia, 212x120 ft., dress factory addn., to G. E. Tillman Co., Approx. $150,000.

Ky., Louisville—FREIGHT TERMINAL—Fred Nauman, Kirkwood, Mo., 1 story, 40x120 ft., brick, concrete floor freight terminal, to Sullivan & Cozzart, 822 W. Kentucky St., $110,000. Awarded 10/9, Carl D. Russell, Anchorage, archt.

Minn., Wheaton—GRAIN ELEVATOR—Farmers Co-operative Elevator Co., Wheaton, A. Hennen, mgr., 38x44 ft., 80,000 bu. grain elevator, 130 ft. high, rein.-con., to Hogenson Constr. Co., 402 Corn Exchange Bldg., Minneapolis, $135,000.

Ore., Portland—TERMINAL—System Terminal Corp., 650 Hanford St., Seattle, Wash., 150x504 ft. truck freight terminal, 7 2700 N. W. 25 St., to Bickford Constr. Co., 821 S. E. 28 St. Approx. $170,000.

Tenn., Knoxville—PLANT—Knoxville Paper Box Co., c/o Barber & McMurry, archts., 2505 Kingston Pike S. W., plant addn., to Daugherty & Waters, Mercantile Bldg. Approx. $75,000.

▲ Wash., Longview—MILL—Weyerhauser Timber Co., Tacoma Bldg., Tacoma, enlarging kraft pulp mill, to L. H. Hoffman Co., 715 S. W. Columbia St., Portland, Ore., $2,000,000. CD 9/7/45.

Wash., Spokane—TERMINAL—West Coast Fast Freight, 650 Hanford St., Seattle, 120x576 ft., freight terminal, to Halin-Spilker & Sons, N2932 Crestline St., Spokane. $250,000. CD 11/15/49.

▲ Alta, Nordegg—PLANT—Brazeau Colliers Ltd., A. D. Sturrock, genl. mgr., Nordegg, reconstr. plant to Riverside Iron & Eng. Works Ltd., 803 24 Ave. S.E., Calgary, and Dominion Bridge Co. Ltd., 802 24 Ave. S.E., Calgary, Approx. $1,500,000. CD 1/6.

Ont., Islington—FACTORY—Trane & Co. of Canada, 4 Mowatt Ave., Toronto, 1 story, factory, crane room and boiler room, to R. G. Kirby & Sons, 539 Yonge St., Toronto, $234,000. CD 8/2.

UNCLASSIFIED

LOW BIDDERS

Arkansas and Oklahoma—RURAL DISTRIBUTION LINES—Arkansas Valley Electric Co-operative, Ozark, 231 mi. rural distr. lines, Crawford, Franklin, Johnson, Pope, Logan, Madison and Sebastian Counties, Ark. and LeFlore Co., Okla., from Killoren Co., Appleton, Wis., $415,119. CD 10/2.

Md., Baltimore—ATHLETIC FIELD—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, Oct. 11, Kirk Ave. Athletic Field and grandstand, field house, incl. showers, admin. offices from Wildberger-Best Constr. Co., 1203 S. Clinton St., $310,000. CD 9/27.

Pa., Clarion—FIRE TOWER—General State Auth., 18 and Herr Sts., Harrisburg, Oct. 11, fire proof tower and stair wells in Becht Hall, Clarion State Teachers College, incl. provision for renovation college kitchen, from Carstensen, Inc., Johnstown, $68,800. Est. $52,000. CD 10/2.

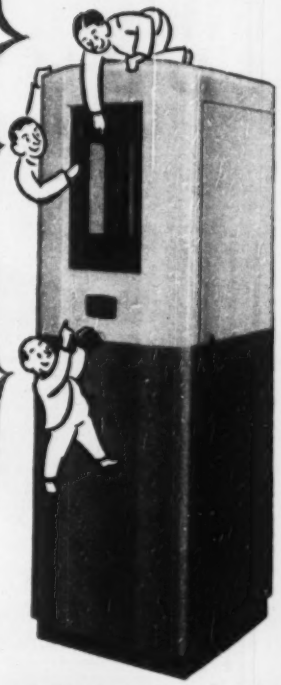
Pa., Torrance—UTILITIES TUNNEL—General State Auth., 18 and Herr Sts., Harrisburg, Oct. 11, general contract, utilities tunnel for building for tubercular patients at Torrance State Hospital, from L-D Building Co., Latrobe, $107,978. CD 10/2.

See the flow!

Know the flow!

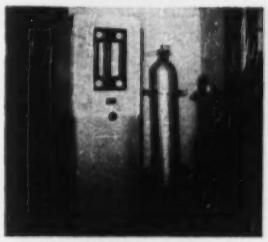
VISIBLE CHLORINE FLOW!

BUILDERS Chlorinizers



BUILDERS CHLORINIZER incorporates a true flow indicator — the SIGHTFLO indicator which measures ALL chlorine passing through the Chlorinizer and shows you the ACTUAL rate of chlorine feed on a direct-reading linear scale. Flow is indicated positively and accurately *only* when there is flow. It's another important feature of Builders Chlorinizer. For engineering information and Bulletins, address Builders-Providence, Inc. (Division of Builders Iron Foundry), 390 Harris Ave., Providence 1, Rhode Island.

BUILDERS PRODUCTS: The Venturi Meter • Propelofio and Orifice Meters • Kennison Nozzles • Venturi Filter Controllers and Gauges • Convayofio Meters Type M and Flo-Watch Instruments • Wheeler Filter Bottoms • Master Controllers • Chlorinizers—Chlorine Gas Feeders • Filter Operating Tables • Manometers Chronofio Telemeters



Installation at Gardner, Mass.

BUILDERS PROVIDENCE Instruments

DRILLING ANYWHERE

We look into the earth

PENNSYLVANIA DRILLING COMPANY PITTSBURGH, PA.

UNDERPINNING AND FOUNDATION CO

FOUNDED 1909

FOUNDATIONS

PILES - CAISSONS
UNDERPINNING
SHAFTS - TUNNELS
COFFERDAMS

No Job Too Large - None Too Small

ENGINEERS & CONTRACTORS
155 EAST 44th STREET NEW YORK

FOUNDATIONS

PRETEST UNDERPINNING
CONCRETE-STEEL PILES
MASS CONCRETE CONSTRUCTION
HEAVY SHORING
DRILLED-IN CAISSONS

Send for catalogs descriptive of the latest foundation types and methods

SPENCER, WHITE & PRENTIS, INC.
10 EAST 40th ST. NEW YORK 16, N. Y.
602 HAMMOND BLDG. DETROIT 26, MICH.

Restore . . . WITH **CONFIDENCE!**

Prompt remedial weatherproofing and waterproofing . . . by the industry's outstanding leader for more than 30 years . . . can save you thousands of dollars in future extensive repairs.

Building Restoration
Masonry Weatherproofing
Basement Waterproofing
Repointing

WESTERN WATERPROOFING COS.
Boston 18 - Detroit 27 - New York 17

FLOORS CAN BE **SHOCK PROOF!** WITH OR WITHOUT PILL

FOR LONG LASTING, HEAVY DUTY
DRIVEWAYS
TRUCKING AISLES
INDUSTRIAL FLOORS
AND THE LIKE

Specify
"ARMOURING"
TRADE MARK

THE ORIGINAL STEEL MESH FLOOR SURFACE REINFORCEMENT
SHOCK-PROOF
WEAR-PROOF
CRACK-PROOF

• *Catalog on Request*

IRVING SUBWAY GRATING CO., INC.
5008 27th St., Long Island City 1, N. Y.
1808 Tenth St., Oakland 20, Calif.

B.C., Port Hardy—WHARF REPAIRS—Dpt. P. Wks., Hunter Bldg, Ottawa, Ont., Sept. 20, wharf repairs, from James McDonald Constr. Co. Ltd., 410 Seymour St., Vancouver, Approx. $50,938. CD 9/11.

CONTRACTS AWARDED

Minn., Brainerd—DAM—Northwest Paper Co., Cloquet, rebuilding dam in Mississippi River, incl. cement for fdn., apron section on top of dam, installing Bascule gates and controls, etc., to Intrusion-Prepakt, Inc., Union Commerce Bldg., Cleveland, O., $500,000.

North Dakota—RURAL DISTRIBUTION LINES—Verendrye Electric Co-operative, Velva, 293.5 mi. rural dist. lines McHenry Co., to Sorkness Constr. Co., N. 28 St. and 7 Ave., Fargo, $303,361. Banister Eng. Co., 1547 University Ave., St. Paul, Minn., engr. CD 2/14.

PROPOSED PROJECTS

WATER SUPPLY

Ark., North Little Rock—North Little Rock Water Co., 117 E. 3 St., imprv. water sys. $225,000. CD 9/25/46.

▲ Conn., Hartford—Bd. Contr. & Supply of Metropolitan Dist., 115 Broad St., Hogback Dam, $10,000,000.

▲ Del., Wilmington—Bd. Water Comrs., 16 and Market Sts., modern water filtering plant at Porter Reservoir site, $3,000,000. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs. W. Compton Wills, c/o owner, engr. CD 3/11/46.

Ind., North Manchester—Town Bd., Earl Heeter, supt. Water Works North Manchester, WW imprvs., rehabilitation distr. sys., c.i. pipe mains, incl. 10,470 ft. 6- to 10-in. mains, 300,000 gal. elevated steel tank, $160,000. Boyd Phelps & Assocs., 1000 Washington St., Michigan City, consult. engrs.

Ky., Morehead—Commonwealth of Ky., New State Office Bldg., Frankfort, plans by Howard K. Bell, 553 S. Limestone St., Lexington, water facilities addn. $400,000, Proctor & Inzels, 125 N. Eastern Ave., Lexington, consult. engrs.

O., Niles—City, expand water department, involving, addnl. water storage facilities, 24 in. water main in N. Main St. $590,000. Bert Holloway, supt. City Water and Light Dpt. CD 11/8/48.

O., Peninsula—City, Frank Seeley, mayor, water distr. sys. $170,000.

▲ Sask., Regina—Municipality, voted bonds, water development at Buffalo Pound Lake, $4,500,000. D. A. R. McCannel, City Hall, city engr. CD 9/20.

SEWERS, WASTE DISPOSAL

Minn., Silver Lake—Village, sanitary sewerage sys. and sewage treatment plant $150,000, Hitchcock & Estabrook, Inc., 521 Sexton Bldg., Minneapolis, consult. engr. CD 1/22/47.

Pa., Bridgeport—James Lees & Sons Co., Bridgeport, waste treatment plant, $300,000. Metcalf & Eddy, Statler Bldg., Boston, Mass., consult engrs.

Tex., Texas City—City, L. A. Robinson, mayor, City Hall, voted bonds, sewage treatment plant, interceptor line and extens. $860,000. Joe J. Rady, 811 Insurance Bldg., Fort Worth, consult. engr. CD 8/21.

▲ Va., Arlington—Arlington Co., Court House, Arlington, bond election Nov. 7, sewage treatment facilities $2,617,000. CD 3/30/45.

▲ Va., Fairfax—Fairfax Co., Court House, sewage disposal plant, on 15 to 18 acres on Potomac River, south of Belle View Apartments. $1,105,000. James J. Corbalis, co. sanitary engr.

Wash., Tenino—City, City Hall, sewerage sys., disposal plant, $155,987. A. K. Stillman, Olympia, consult. engr. CD 6/30/47.

BRIDGES

Mich., Monroe—City, $200,000 bond election Nov. 7, concrete bridge, 56 ft. wide with 6 ft. sidewalk, 42 ft. pavement across River Raisin on Macomb St., replace old steel bridge.

Wash., Tacoma—Pierce Co., County Court House, bridge over Hale's Passage to connect Fox island to mainland, $650,000. H. Hadley, Seaboard Bldg., 4 and Pike Sts., Seattle, Zone 1, consult. engr.

STREETS AND ROADS

Ill., Decatur—City, widn. c. conc. asph. resurf. N. 22 St. from 36-36 ft. to 46 ft. $100,000. John M. Weir, Decatur, city engr. CD 10/18/43.

Miss., Bonneville—Prentiss Co., road imprvs. Proj. 22 P 1032 $139,000; Proj. 22 P 1038, $61,346; Proj. 22 P 1039, $79,817, T. O. Mabry Jr., Okolona consult. engr.

Montana—State Hy. Comm., Helena,

Beaverhead and Madison Counties—constr. 11 mi. section hy. between Dillon and Twin Bridges to provide water level route to eastern Montana and by-pass present continental divide crossings east of Butte. $500,000. Troy Carmichael, state my. engr.

▲ Neb., Omaha—City, City Hall, 18 and Farnam Sts., $1,250,000 bond election Nov. 7, street imprvs. E. W. Woodbridge, city engr.

(Continued on page 85)

FOR SOIL COMPACTION WHERE ROLLERS *CAN'T GO!*

The Barco Pegson Rammer

This self-contained, portable rammer is specially adaptable to tamping close to abutments and other wall structures, in narrow ditches and trenches, thus eliminating troublesome settlement areas. Actual field tests, certified by Government agencies, have proved that one man using the Barco can do *the work of five* who use conventional equipment! This economical machine is easy to operate—no lifting, no strain, no vibration. A slight tilt on the handle will "walk" the Barco wherever you want it to go. Don't tie up your funds in heavy equipment—order Barco today. Write for free demonstration or catalog to Barco Manufacturing Co., 1814K Winnemac Avenue, Chicago 40, Ill.

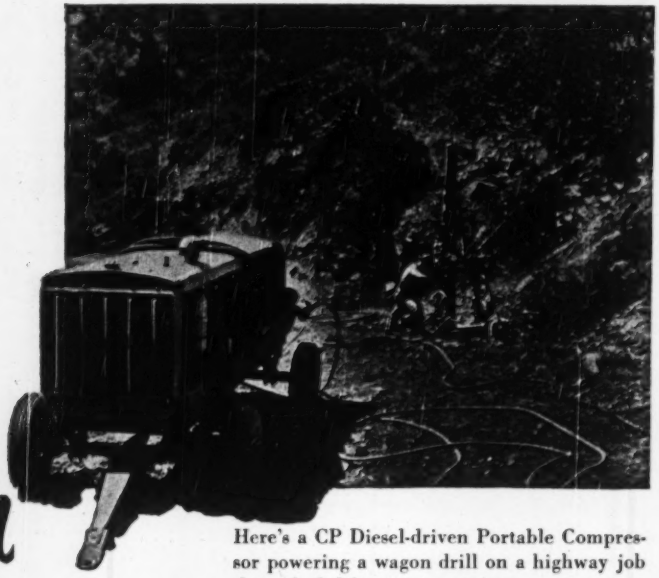
BARCO *Gasoline Rammer*

In Canada: THE HOLDEN CO., LTD., MONTREAL, CANADA

FREE ENTERPRISE : : : THE CORNERSTONE OF AMERICAN PROSPERITY

Cut Construction Schedules...

with CP equipment



Here's a CP Diesel-driven Portable Compressor powering a wagon drill on a highway job through California mountains.

In any location where compressed air is needed, a CP Portable Compressor will provide an ample supply *economically*, because the gradual speed regulator adapts engine speed to air demands, holding fuel consumption to a minimum.

CP Portable Compressors are available in gasoline-driven models of 60, 105, 160, 210 and 315 c.f.m. actual capacity, and in Diesel-driven models of 105, 160, 210, 315 and 500 c.f.m.

Nuts to 1¼" bolt size are quickly run off—or on—with this heavy-duty CP-365 Air Impact Wrench. A big time-saver on construction jobs both for erection of structural members and maintenance of heavy equipment.

No job is too tough for these heavy-hitting CP-117 Demolition Tools, designed for breaking dense concrete and other extremely hard materials.

In the world's largest line of demolition equipment there is a CP tool for every type of demolition work. Five models range from the lightweight CP-111 (25 lb. class) to the heavy-duty CP-117 (80 lb. class).

Write for full information on CP Contractors' Equipment.

CHICAGO PNEUMATIC TOOL COMPANY

General Offices 8 East 44th Street New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

(Continued from page 82)

▲ **Oklahoma**—State Hy. Dpt., Capitol, Oklahoma City.
Adair Co.—grading and drainage 7 mi. State Hy. 51, Welling, $274,000.
grading, drainage 9.7 mi. U. S. 59, in Westville, $620,000.
Beckham Co.—grading, drainage, pavement 5 mi. primary aid on State Hy. 41, in Sayre, $210,000.
grading, drainage, surf. 14.5 mi. State Hy. 73 in Erick, $396,000.
Cherokee Co.—grade, drainage 9.5 mi. State Hy. 82 from Tahlequah to Gideon $460,000.
Coal Co.—Grading, drainage, minor structures, surf. 8 mi. U. S. 75, in Coalgate, $750,000.
Creek Co.—grading, surf. 1 mi. State Hy. 67, east of Drumright, $150,000.
Custer Co.—grading, drainage, surf. 8 mi. State Hy. 33, in Thomas, $220,000.
grading, drainage, surf. 8 mi. State Hy. 54, in Hydro, $475,000.
Delaware Co.—grading, drainage, surf. 13 mi. U. S. Hy. 59, in Jay, $949,000.
Ellis Co.—grading, drainage, pavement 13.3 mi. State Hy. 60, in Arnett, $366,000.
grading, drainage, surf. 6.8 mi. State Hy. 15, in Camargo, $125,000.
grading, drainage, surf. 8 mi. State Hy. 283, $160,000.
Greer Co.—grading, drainage, surf. 2 mi. State Hy. 34, in Mangum, $44,000.
grading, drainage, surf. 0.1 mi. State Hy. 283, in Mangum, $20,000.
Harmon Co.—grading, drainage, surf. 10 mi. State Hy. 90, in Hollis, $425,000.
Haskell Co.—grading, drainage 9 mi. State Hy. 26 in Mc Curtain, $369,000.
Hughes Co.—grading, drainage, minor structures, surf. 16 mi. State Hy. 9, Watumka, $900,000.
Jackson Co.—4 mi. Urban Aid on U. S. 62 in Altus, $500,000.
grading, drainage, surf. 0.5 mi. State Hy. 283, in Altus, $110,000.
grading, drainage, surf. 8 mi. State Hy. 5, in Altus $526,400.
Johnston Co.—grading, drainage, minor structures surf. 14 mi. State Hy. 7, Connerville, $500,000.
Le Flore Co.—grading, drainage, surf. 6.5 mi. U. S. Hy. 271 in Spiro, $425,000.
Muskogee Co.—grading, drainage, surf. 3.3 mi. U. S. Hy. 69, in Muskogee, $350,000.
grading, drainage, surf. 4 mi. U. S. Hy. 62, in Fort Gibson, $378,000.
Nowata Co.—grading, drainage, surf. 4 mi. U. S. Hy. 60, in Nowata, $742,000.
Okmulgee Co.—grading, drainage, surf. 6.3 mi. U. S. Hy. 75, in Okmulgee, $725,000.
Osage Co.—grading, drainage, surf. 2 mi. State Hy. 18, in Fairfax, $20,500.
grading, drainage, surf. 1 mi. State Hy. 99, in Pine, $42,000.
Ottawa Co.—grading, drainage, surf. 7 mi. U. S. Hy. 60, in Fairland, $645,000.
grading, drainage, surf. 2 mi. State Hy. 10, in Miami, $525,000.
Pawnee Co.—grading, drainage, surf. 7 mi. State Hy. 18, in Pawnee, $580,000.
Rogers Co.—grading, drainage surf. 8.8 mi. U. S. 66, in Claremore, $940,000.
grading, drainage, surf. 6.8 mi. State Hy. 88, in Tiawah, $372,000.
Roger Mills Co.—grading, drainage, paving 9 mi. as primary aid State Hy. 34, in Harmon, $225,000.
grading, drainage, paving 13 mi. as primary aid, State Hy. 34 in Cheyenne, $350,000.
grading, drainage, surf. 9.2 mi. State Hy. 47 in Cheyenne $506,000.
grading, drainage, surf. 5 mi. State Hy. 47, in Cheyenne, $260,000.
Seminole Co.—grading, drainage, minor structures, surf. 2.2 mi. State Hy. 9, in Seminole, $300,000.
grading, drainage 2.2 mi. State Hy. 9 at Lima, $110,000.
Sequoyah Co.—grading, paving 5 mi. U. S. 64 east of Muldrow, $600,000.
Tillman Co.—grading, drainage, surf. 8 mi. State Hy. 5, in Frederick, $260,000.
grading, drainage, surf. 8 mi. State Hy. 283, in Frederick, $315,000.
Tulsa Co.—2.5 mi. Urban By-pass U. S. 66 at Tulsa $1,500,000.
Wagoner Co.—grading, drainage 6.5 mi. State Hy. 51, east of Wagoner, $145,000.
grading, drainage, surf. 5 mi. State Hy. 51, in Wagoner, $175,000.
Washington Co.—grading, drainage surf. 3.3 mi. U. S. Hy. 75, in Bartlesville, $260,000.
Washita Co.—grading, drainage, surf. 13 mi. State Hy. 54 at Foss $325,000.
grading, drainage, surf. 3.2 mi. State Hy. 55 A, in Foss, $115,000.
grading, drainage, surf. 0.8 mi. State Hy. 66, in Cordell, $90,000.
grading, drainage, surf. 17 mi. State Hy. 54, at Rocky, $460,000.
grading, drainage, surf. 5 mi. State Hy. 55 at Sentinel, $203,000. S. K. Mc Celland, c/o owner, engr.
Okla., Lawton—City, grade pave 21 residence blocks in Dist. 75. $110,000. Charles Gallagher, Lawton, engr.
Okla., Muskogee—City, voted bonds, access highways. $100,000. CD 9/15.

AIRPORTS

▲† **Fla., Mayport**—Yards & Docks Annex, Arlington, Va., plans by Baie, Horton Assoc., Fort Myers, moorings bulkheads landing field drainage, piers and taxiways and ship berthing facilities at Navy Carrier Base $1,600,000. CD 9/8/49.
Minn., Minneapolis—HANGAR—Mid-Continent Airlines, Inc., Wold-Chamberlain Field, plans by Larson & Mc Laren, 1901 Foshay Tower, hangar and shop bldg. at World-Chamberlain Field Twin City Airport, $350,000.
† **N. J., Lakehurst**—AIRSHIP DOCKS—Dpt. Navy, Pub. Wks. Office, Phila. Naval Base, Phila., Pa., Airship Docks No. 5 and 6 alterations, NOY 23142, $180,000.
▲ **N. J., Lakehurst**—HOUSING—U. S. Dpt. of Navy, Pub. Wks. Office, Phila. Naval Base, Phila., Pa., Title 8 plans by Edward & Green, Broadway and Carman Sts., Camden, housing at Naval Air Station, Approx. $1,000,000 CD 9/1.
▲† **Pa., Johnsville**—RUNWAY EXTEN.—Dpt. of Navy, Pub. Wks. Office, Phila. Naval Base, Phila., runway exten., Naval Air Development Center, NOY 24190. $1,782,000. CD 2/6/46.

LATIN AMERICA

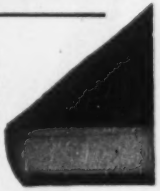
Mexico, Cuidad Guerrero—Mexican Govt., Sria de R. H. Paseo de la Reforma, 69, Mexico City, plans new city accommodating 12 to 15,000 population near the Falcon Dam on the Rio Grande River. $10,000,000.
Venezuela—Orinoco Mining Co., 25 Broad St., New York, N. Y., U. S. A., port work for Bolivar Ore Development on Orinoco River. Knappen Tippetts Abbett Eng. Co., 62 W. 47 St., New York, N. Y., U. S. A. engr.

PUBLIC BUILDINGS

▲ **Ark., Fort Smith**—HOUSING—Fort Smith Housing Auth., 3300 N. 6 St., plans by Harolson & Mott, Merchants Bank Bldg., 150 housing units. $1,273,000.
Calif., Azusa—SCHOOLS—Azusa City School Dist., 340 W. 5 St., plans by Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, Siauson School, $388,600; Paramount School, $260,000; New Riley School, $359,000. CD 2/17.
▲ **Calif., Compton**—SCHOOLS—Compton Union High School & Junior College Dist., 601 S. Acacia St., election Oct. 20 $3,600,000 bonds for Junior College Dist. and $3,500,000 bonds for High School Dist., (1) new junior college (2) two new senior high schools (3) three junior high schools, $13,000,000. Daniel, Mann & Johnson, 672 LaFayette Park Pl., Compton, Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, Jerome DeHetre, 414 N. Burris Ave., Compton, and Austin, Field & Fry, 2311 W. 3 St., Los Angeles, archts. CD 6/30.
▲ **Calif., San Bruno**—SCHOOL—San Bruno Elementary School Dist., San Bruno, voted $450,000 bonds, school in Bel-Air Subdivision, $481,834; school, $669,996. CD 9/11.
▲ **Calif., Ventura** — ADMINISTRATION, etc. — Bd. Supervs., Ventura Co., Court House, $1,250,000 bond election Nov. 7, 4 story administration bldg. and hospital addn. $1,587,100. Roy Wilson, Box 931, Santa Paula, archt. CD 10/9.
Fla., Miami—SCHOOL—Dade Co. Bd. P. Instruction, 275 N. W. 2 St., plans by James W. Voorhies, 639 N. E. 64 St., school for Negroes, $300,000. CD 10/9.
▲ **Fla., Miami**—SCHOOLS—Dade Co. Bd. P. Instruction, 275 N. W. 2 St., plans by L. F. Van, 1674 Coral Way, Bethune School, $300,000; plans by W. H. Merriam, 1022 Malaga Ave., Coral Gables, Kinlock Park School, $460,000; plans by Robert M. Little, 2180 Brickell Ave., Booker T. Washington School addns., $260,000; plans by Steward & Skinner, 223 1 St., Miami; Kensington Park School, $270,000; plans by Edward T. Rempe Jr., 2206 Ponce De Leon Blvd., Coral Gables, $400,000; plans by James W. Voorhies, 629 N. E. 64 St., Junior-Senior High School, $750,000. 11/7/44.
Fla., Miami Beach—HOUSING—Miami Beach Housing Auth., c/o Norman M. Giller, archt., 1575 Washington Ave., Biscayne Street Housing, incl. 50 units, $400,000.
Ga., Richland—HOUSING—Richland Housing Auth., Richland, plans by John J. Harte Co., Techwood Dr. N. W., Atlanta, 200 housing units. Approx. $750,000.
Ill., Joliet—HOUSING—Joliet Housing Auth., 19 Jefferson St., plans by Krugel & Wilkins, 4 E. Clinton St., apartment and row housing, $800,000.
† **Ill., Lemont** — RESEARCH — U. S. Atomic Energy Comm., 1901 Constitution Ave. N.W., Wash., D. C., plans by Voorhees, Walker, Foley & Smith, 69 W. Washington St., Chicago, Zone 2, 2 story, concrete research bldg., near here. $400,000.
Ia., Waterloo—COUNTY HOME—Black Hawk Co. $500,000 bond election Nov. 7, county home, $460,000. Ralston & Ralston, Waterloo, archts.
Kan., Norton—DINING—State Bd. Social Welfare, Topeka, plans by C. L. Marshall, state archt., Topeka, Lorentz Schmidt, McVay & Peddie, 1832 E. 2 St., Wichita, assoc. archts., 4 story dining bldg. at Sanatorium for Tuberculosis, $500,000.
La., Eunice—HOSPITAL—City and St. Landry Parish, plans by Theo L. Perrier, Carondelet Bldg., New Orleans, hospital. $400,000. CD 6/22.
Md., Upper Marlboro — SCHOOLS — Comrs. Prince Georges Co., G. Gardner Shugart, supt., Schools, Thomas S. Gwynn Jr., dir., School Planning, voted $500,000 bonds, complete Wildercroft, Landover Hills, Camp Springs, Columbia Park, Holly Grove, Lanham, Brandywine and Surrattsville Elementary

Practical answers to specific problems in . . .

planning and designing foundations



THIS profusely-illustrated guidebook provides you with sound instructions on every important phase of foundation engineering — from how to gather and interpret data regarding soils, and how to plan the support of a structure, to how to handle the construction of that foundation.

Packed with time-saving methods and tips on the planning and dimensioning of foundations, the book clearly illustrates a wide variety of problems . . . *and provides quick answers based on actual practice.* Throughout, emphasis is put on the *creative planning* of foundations, and on the use of soils for the purpose of supporting specific structures.

JUST OUT!

FOUNDATIONS of STRUCTURES

By CLARENCE W. DUNHAM

Professor of Civil Engineering, Yale University

609 pages, 6 x 9, 464 illustrations, $7.50

McGRAW-HILL
CIVIL ENGINEERING SERIES

IN SIMPLE, clear language, and with the aid of over 400 illustrations, this guidebook describes the ordinary types of foundations encountered in engineering practice . . . shows the principles of the action of foundations . . . tells how some actual substructures were planned and what happened to them . . . and explains many detailed, worked-out design problems. From types of foundation materials, showing of soils, spread footings and grade beams . . . to precast-concrete piles, forces acting upon piers, and abutments for arches—here are the principles, methods, ideas, data, and practices you need for handling the regular and *special* jobs met in modern foundation engineering.

detailed information on such

- **properties of specific foundation materials**
- **planning subsurface explorations**
- **estimates of settlement**
- **walls to spread a single concentrated load**
- **mats to resist hydrostatic pressure**
- **anchors for backstays**
- **pile-driving formulas**
- **choice of type of pile**
- **pneumatic caissons**
- **abutments for rigid-frame bridges**
- **underpinning columns and walls, etc.**

The book gives detailed treatment of bridge piers, abutments, and pile foundations. It also discusses foundations subjected to vertical and horizontal forces and overturning moments.

SEE THIS BOOK 10 DAYS FREE

McGRAW-HILL

McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 18, N. Y.

Send me DUNHAM'S FOUNDATIONS OF STRUCTURES for 10 days' examination on approval. In 10 days I will remit $7.50, plus a few cents for delivery, or return the book postpaid. (We pay for delivery if you remit with this coupon; same return privilege.)

Name .....
Address .....
City ..... Zone ..... State .....
Company .....
Position ..... NR 10-26-50

This offer applies to U. S. only.

ATLANTIC Pneumatic TOOLS

Use with your standard power pavement equipment . . . .

THE ATLANTIC PNEUMATIC ROCK BREAKER

Splits Large Rocks and Boulders quickly
No Plugs and Feathers — No Explosives
Nearly 4½ times faster

- Effective quick action in removing stones, boulders and rocks from excavations and ditches.
- Eliminates the slow and costly plug and feather method, and the risky and troublesome use of explosives.
- The specially heat-treated Atlantic Tool Steel used in the Atlantic Pneumatic Rock Breaker gives it the extreme toughness to withstand the severest usage and resist breakage regardless of the hardness of the stone.
- Used with standard power pavement breakers. No tool upkeep. Tougher than any stone. A size for every service.

Write for descriptive folder ERB.

Specialists in Tool Steels for chisels, drills, blacksmith tools and Alloy Steels for axles, bolts, pins, pistons and shafts.

Non-tempering tool steels for greater safety and speed.

ATLANTIC STEEL CORP. 1775 BROADWAY, N. Y. 19

VACUUM CONCRETE

Most economical to use for

PRECAST WALLS, FLOORS, ROOFS, BEAMS and COLUMNS— IT MULTIPLIES THE SPEED

Vacuum Lined Forms can be

RE-USED AS MANY AS 8 TIMES IN ONE DAY

VACUUM HANDLING EQUIPMENT

Strips castings from molds and handles them without breakage

VACUUM CONCRETE INC. 4210 SANSOM ST. PHILA. 4, PA

Schools on Accokeed, Chilum, Holly Grove, Berwyn, Clinton, Columbia Park and Capitol Heights sites.

▲ **Mass., Boston**—HOUSING—City Housing Auth., C. T. Kiley, chn., 230 Congress St., plans by Samuel Glaser Assoc., 105 Newbury St., one hundred and thirty full bsmnt., 260 unit residences, Wood Estate Morton St. in Dorchester, Proj. 200-10, $3,807,000, Albert Goldberg, 739 Boylston St., consult. engr.

Mass., Boston—SCHOOL—Commonwealth of Mass., Dpt. Educ., 200 Newbury St., plans by Krokyn & Browne, 184 Boylston St., brick, steel, concrete Lowell Textile School, incl. auditorium and admin. bldg., Proj. E-305-7918-14. $600,000.

Mass., New Bedford—HOUSING—City of New Bedford Housing Auth., Presidential Heights, plans by Kandzi & Frost, 60 State St., Boston, 500 housing unit, PHA 7-2, $800,000. CD 7/26.

Mass., Quincy—SCHOOL—City, Supt. Schools, plans by Anderson-Nichols & Co., 53 State St., Boston, brick, steel concrete school, Germantown and Palmer Sts. $600,000.

▲ **Mich., Detroit**—AUDITORIUM—City, J. E. Frawley, pres. Memorial Hall Comn., plans by O'Dell, Hewlett & Luckenbach, and Crane, Kiehler & Kellogg, 2300 Dime Bldg., Henry and Edsel Ford Auditorium, Woodward, Jefferson and Randolph Sts. $2,500,000. CD 5/16.

Minn., St. Paul Park—SCHOOL—Bd. Educ., c/o clk., plans by Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, school, $500,000.

▲ **Miss., Jackson**—HOSPITAL—State Bldg. Comn., New Capitol Bldg., plans by R. W. Naef, Masonic Bldg., E. L. Malvaney, Millsaps Bldg., and N. W. Overstreet & Assoc., 201 Lamar St., medical and teaching hospital. $9,000,000.

Miss., State College—ANIMAL HUSBANDRY—State Bldg. Comn., c/o James T. Canizaro, archt., Deposit Guaranty Bank Bldg., Jackson, animal husbandry bldg. at Mississippi State College, $400,000.

N. J., Marlboro—SENILE SECTION—Marlboro State Hospital, Marlboro, plans by Ferrenz & Taylor, 107 Monouth Rd., Red Bank and Marcel Villaneuve, 194 Hackensack Ave., East Orange, 200-bed senile section. $550,000. CD 5/15.

N. J., Rockaway—SCHOOL—Morris Hills Regional Bd. Educ., Speedwell, regional high school for Wharton, Denville and Rockaway $880,000.

▲ **N. C., Charlotte**—SCHOOLS—City and Mecklenburg Co. Bd. Educ., W. B. McClintock, chn. Bd., Charlotte, voted bonds, city schools, $3,550,000; county schools, $1,775,000. CD 9/21.

O., Ashtabula Harbor—SCHOOLS—Bd. Educ., Ashtabula Harbor, $650,000 bond election Nov. 7. Washington School addn., Lake and W. 9 St. $285,000; gymnasium, on W. 3 St. near Lake Ave., $357,000.

O., Dayton—SCHOOL—Bd. Educ., Van Buren Twp. School Dist., Dayton, $865,000 bond election Nov. 7, school expansion program.

O., Powell—HIGH SCHOOL—Liberty Union Bd. Educ., Harold Phinney, clk., Powell, $496,000 bond election Nov. 7, three-township Liberty Union Central High School on Scott-Shanahan Rd.

Okla., Enid—SCHOOL—Bd. Educ., Enid, voted bonds, school expansion. $440,000. M. H. Wheeler, Bass Bldg., archt. CD 9/22.

Okla., Lugert—RESORT HOUSE—State Planning & Resources Bd., Capitol, Oklahoma City, Zone 5, resort house at Quartz Mt. State Park, near here $500,000.

Okla., Norman—HIGH SCHOOL—Bd. Educ., Norman, voted bonds, high school. $460,000. Joseph Smay, Norman, archt.

▲**Okla., Tulsa**—SCHOOL—Bd. Educ., Tulsa, voted bonds, school expansion. $4,800,000. CD 9/12.

Pa., Brookville—HOUSING—Jefferson County Housing Auth., Court House, rental housing to consist 40 two-bedroom and 40 three-bedroom units, single story, ranch type constr. 1 and 2 family constr. $950,000.

Pa., Fort Washington—SCHOOL—State Public School Bldg. Auth., Harrisburg, and Upper Dublin Twp. School Dist., Fort Washington, plans by Davis, Dunlap & Carver, 1717 Samsom St., Phila., high school addn. $442,800. CD 11/27/46.

Pa., Monessen—HOUSING—Westmoreland County Housing Auth., Court House, rental housing consisting 10 one-bedroom, 40 two-bedroom and 10 three-bedroom units, 1 and 1½ story, single units, brick veneer with bsmnts., duplex type for 6 one-bedroom, $600,000.

▲ **Pa., Wallingford**—SCHOOL—State Public School Bldg. Auth., Harrisburg, and Nether Providence Twp. School Bd., Wallingford, plans by Howell Lewis Shay, Packard Bldg., Phila., school addn. $1,396,656.

▲ **R. I., Cranston**—SCHOOLS—City, C. W. Bosworth, supt. Schools, Park Ave., plans by Howe, Prout, Ekman, 17 Custom House St., Providence, school, Glastone St., $850,000; plans by Creer, Kent, Mather, Cruise & Aldrich, 423 Industrial Trust Bldg., Providence, brick, steel school, Stadium Area, $450,000.

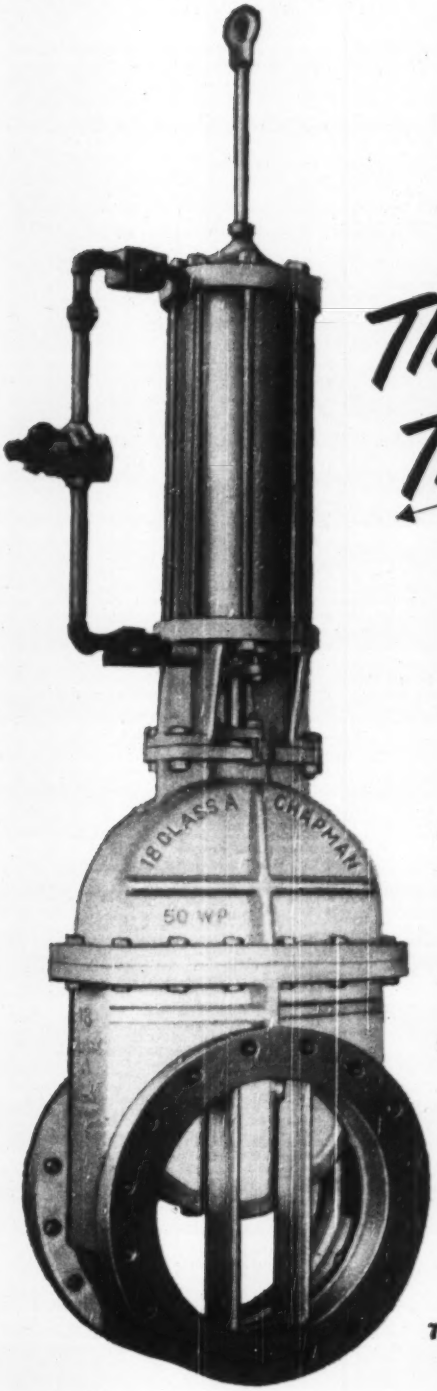
▲ **Tenn., Knoxville**—SCHOOLS—Knox Co. Bd. Educ., Knoxville, school imprvs. $1,040,000.

Tenn., Pulaski—HOUSING—Pulaski Housing Auth., c/o Turner & Northington, archts., Medical Arts Bldg., Florence, Ala., 65 housing units. $500,000. CD 2/27.

▲**Tenn., Tullahoma** — HOUSING — Tullahoma Housing Auth., c/o John J. Harte Co., archt., Techwood Dr., N.W. Atlanta, Ga., housing units. $1,000,000-$1,500,000.

▲**Tex., El Paso**—SCHOOL—El Paso Independent School Dist., El Paso, plans by Davis & Foster, Mills Bldg., masonry Aitura School (for handicapped children),

(Continued on page 88)



There's Less Wear... Tighter Seating...

WITH

CHAPMAN

BEAMED WATERWAY GATE VALVES

Markedly Superior under throttling conditions to double disc, parallel seated gate valves, is this valve designed by Chapman. The bronze vertical beams in the downstream port prevent the disc from tipping into the waterway. Bearing contact between disc and body facing is increased 6 to 10 times . . . wear is evenly distributed on seat rings . . . leakage reduced to a minimum.

THIS BULLETIN TELLS THE COMPLETE STORY

The CHAPMAN VALVE MANUFACTURING COMPANY

INDIAN ORCHARD, MASSACHUSETTS

"Tag Master"

• ADVANTAGES

1. Less Booming
2. Less Swinging
3. Less Travel
4. Control of clamshell
5. Can be used as a Dipper Trip

• BECAUSE

1. Tagline pull can be increased *manually* to cast—twist or snub a clamshell, (or trip a bucket.)
2. *Automatic* setting maintains *uniform* tagline tension at *all* bucket levels.

• USERS REPORT

1. Increased performance
2. Low cost operation

There are years of experience behind every "TAG-MASTER."

MORIN MFG. CO.
WEST SPRINGFIELD, MASS.

Send "TAG-MASTER" details to—

Name .....

Address .....

.....

.....

Make—Size & Model of Machine

(Continued from page 86)

$275,000; masonry Alamo School, auditorium, $250,000; plans by Carroll & Daeuble, 1001 E. Yandell Blvd., masonry Normandy School, $550,000.

▲ **Tex., McAllen**—HOSPITAL—City, plans by O'Neil Ford, Willow Way, Route 7, San Antonio, and Richard Colley, 3204 Santa Fe St., Corpus Christi, municipal hospital. $1,000,000. CD 8/9.

▲ **Tex., Orange**—HOUSING—Orange Housing Auth., Orange, plans by Matkin, Fitch & Assoc., 3101 San Jacinto St., Houston, 100 housing units for Whites; 100 housing units for Negroes. $875,000 each. CD 12/14/49.

Wash., Ephrata—COURT HOUSE—Grant Co., Court house, bond election Nov. 7, court house addn. $440,000. CD 10/6.

Wash., Kelso—SCHOOLS—School Bd., Kelso, bond election Nov. 7, Junior High School, $850,000; Wolff & Phillips, Pearson 4 Ave. Bldg., Portland, Ore., archts. CD 12/1/48.

▲ **Alta., Edmonton**—HOSPITAL—Municipality, plans by Noel Dent, City Hall, Royal Alexandria Hospital addn., maternity bldg., $1,000,000; remodeling existing bldg., $1,200,000; tunnel to connect existing bldg. to maternity bldg., $85,000. CD 2/18/49.

▲ **Man., Winnipeg**—STEAM PLANT—Municipal Hydro-Electric System, 55 Princess St., Winnipeg, steam plant addn., Amy St. $3,000,000. H. L. Briggs, c/o owner, engr. CD 2/5/48.

COMMERCIAL BUILDINGS

▲ **Ariz., Phoenix**—OFFICE—First National Bank of America, Washington at Central Ave., plans by Welton Becket, 5757 Wilshire St., Los Angeles, Calif., 17 to 20 story, rein.-con. bank and office, $4,000,000.

▲ **Ariz., Phoenix**—DEPARTMENT STORE, etc.—Land-rum-Mills Realty Co., Phoenix, plans by Milton Anderson, 520 W. 7 St., Los Angeles, Calif., 2 story, rein.-con. 150x300 ft. department store and garage, $3,000,000.

▲ **Ind., Fort Wayne**—STORE—Sears, Roebuck & Co., W. Arthington and S. Homan Sts., plans by Carr & Wright, 333 N. Michigan Blvd., Chicago, Ill., 4 story, 100,000 sq. ft., brick, stone, structural steel department store, Rudisell Blvd. and Piqua Ave. $1,500,000.

La., Edgard—SCHOOL—St. John the Baptist Parish, Edgard, voted bonds, school imprvs. $600,000.

N. Y., Roosevelt—SCHOOL, etc.—Queen Most Holy Rosary Church, Roosevelt, plans by William J. Boegel, 12 E. 48 St., New York, Zone 17, 1 story school, and convent at North Long Beach and Centennial Aves. $700,000.

O., Youngstown—APARTMENT—Henry Friedman, 145 Bissell St., apartment, on north side.

▲ **Tex., Houston**—RESIDENCES—Wm. G. Farrington, 1719 Sunset Blvd., 74 two story masonry residences, concrete slab fdn. and piers, between San Felipe Rd. and Wondway St. $1,850,000. R. C. Shaner, 4019 River Dr., consult. engr.

▲ **Tex., Houston**—COMMERCIAL B.—Tennessee Gas Transmission Co., Commerce Bldg., 6 to 8 story commercial bldg. $2,000,000; auto parking area, hard paving. $50,000.

Tex., San Angelo—HOSPITAL—Memorial Hospital, San Angelo, plans by C. M. Williams, San Angelo Hotel, 100 bed, masonry hospital, $750,000.

Wash., Wenatchee—CHURCH—First Methodist Church, Wenatchee, plans by J. B. Wood, designer, Wenatchee church, $300,000. CD 4/14/49.

▲ **Alta., Calgary**—HOTEL—Royal Hotel, Second St. W. and Eighth Ave., plans by Rule, Wynn & Rule, 513 Eighth Ave., Calgary, 10 story 150 room, hotel addn., office space, dining room, shops, lobby etc. on Seventh Ave. W. and Second St. Approx. $1,000,000. CD 3/20/47.

INDUSTRIAL BUILDINGS

Ark., Little Rock—BULK STATION—Pan-American Southern Corp., 500 E. Markham St., bulk station and allied facilities, $350,000.

▲ **Ill., Chicago**—ASSEMBLY PLANT—Ford Motor Co., 7400 S. Cicero St., Zone 29, rehabilitate former Dodge Chicago Aviation Engine War Plant, incl. 6,000,000 sq. ft. $60,000,000.

▲ **Ind., Terre Haute**—POWER PLANT—Public Service Co. of Indiana, Inc., Trac Terminal Bldg., Indianapolis, power plant, $10,000,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, 3, Ill., consult. engrs.

Ky., Lexington—PLANT—Kentucky Glass Works of General Electric Co., Russell Cave Pike, 30,000 sq. ft. incandescent bulb plant, $750,000.

▲ **Ky., Louisville**—GENERATING UNIT—Louisville Gas & Electric Co., 311 W. Chestnut St., imprv., enlarging electric generating unit at Paddy Run Station on Ohio River, $8,600,000. Pioneer Service & Eng. Co., 231 S. LaSalle St., Chicago, Ill., engrs. (Correction-engineers). CD 9/6.

▲ **Michigan**—PLANT—Detroit Edison Co., Paul W. Thompson, eng. vice pres., 2000 Second St., Detroit, 400,000 hp. generating plant on St. Clair River between St. Clair and Marine City. $35,000,000.

▲ **Mich., Detroit**—PLANT—S. Lowenstein & Co., c/o Atty. Henry Meyers, 2024 Dime Bldg., brick, steel, concrete, meat packing plant, Vernor Hy. and Dix St. $1,000,000.

▲ **N. J., Clifton**—PLANT—Nevins-Church Press, 92 Midland Ave, Glen Ridge, plant 1/3 mi. east of Allwood traffic circle on Route S-3 and Allwood Ave. $1,000,000.

▲ **N. J., Teterboro**—PLANT—Charles Bruning Co., Inc., 102 Reade St., New York, N. Y., 120,000 sq. ft. plant on 10-acre plot at Bergen County Industrial Terminal $1,000,000. B. Spencer Newman, 173 Main St., Hackensack, archt. Jacoby & McGrayne, 8 Essex St., Hackensack, engrs.

▲ **O., Urbana**—FACTORY—Liquid Carbonic Corp., 3100 S. Kedzie St., Chicago, Ill., factory, mfg. dry ice and other carbon dioxide items on 14-acre tract near here. $1,000,000.

Okla., Enid—GRAIN ELEVATOR—Union Equity Co-operative, Enid, Roberts & Schaefer Co., 130 N. Wells St., Chicago 6, Ill., are not engineers on grain elevator. No engineer will be selected on this project. (Correction-eng neers). CD 9/7.

▲ **Tex., Beaumont**—PLANT, etc.—Texas Gulf Sulphur Co., 2nd Natl. Bank Bldg., Houston, main sulphur mining plant, $2,500,000; power plant, $1,000,000; pumping units and power generating unit, $1,000,000; sys. of pipe lines, to carry superheated water to wells and convey molten sulphur to pits. $500,000.

Tex., Corpus Christi—PLANT—Pontiac Refining Co., 3400 Lawrence Dr., and Chicago Corp., 3105 Leopard St., converting port on old Great Southern Corp. thermal cracking plant into plant to produce Butylene. $500,000.

Tex., Port Arthur—REFINERY STORAGE—Texas Co., Port Arthur, reconstruct refinery storage. $500,000.

▲ **Tex., Houston**—WAREHOUSE—Kimbell-Diamond Milling Co., Bay City, warehouse sys. for storage of grain and groceries, 5 acre site in Highland Industrial Terminal. $1,000,000.

▲ **Tex., Sweetwater**—SILOS, etc.—Lone Star Cement Corp., 1st. Natl. Bank Bldg., Dallas, 15 storage silos each 26 ft. diam, 120 ft. high, $1,750,000; 8 raw mix silos 22 ft. diam, 80 ft. high $750,000; rein.-con. storage bldg, $650,000, near here.

▲ **Wash., Everett**—PLANT—Everett Pulp & Paper Co., Everett, 30x350 ft. paper-making plant, $2,000,000 (with equipment).

▲ **Ont., Toronto**—FACTORY—Hinde & Dauch Paper Co. of Canada Ltd., 43 Hanna Ave., Toronto, 260,000 sq. ft. factory, Queen Elizabeth Way, $3,000,000. CD 1/29/47.

▲ **Ont., Toronto**—WAREHOUSE—Robert Simpson Co. Ltd., 196 Yonge St., plans by F. S. Corley, Robert Simpson Co. Ltd., 176 Yonge St., rein.-con., brick warehouse, near Wilson Ave. and Spadina Rd., North York Twp. $2,000,000.

UNCLASSIFIED

▲ **Ark., Little Rock** — SHOW BUILDINGS — Arkansas Livestock Show Assn., Little Rock, erecting bldgs. for show, $1,500,000.

▲ **Ark., West Memphis**—RACE TRACK—Dixie Downs, Inc., West Memphis, plans by Wiseman & Bland, Shrine Bldg., Memphis, Tenn., race track. $2,000,000.

Calif., Long Beach—PIER REPAIRS, etc.—City Council, 205 W. Broadway, Belmont Pier repairs, extens. $158,105. George F. Nicholson, 122 W. 5 St., consult. engr. CD 12/6/44.

† **Del., Wilmington**—SHIPYARD ALTERATIONS—U. S. Navy Dpt., Pub. Wks. Officer, Capt. P. M. Jeffords, 45th Naval District, Naval Shipyard Phila., Pa., Naval Reserve Shipyard alterations, $250,000.

† **Del., Wilmington**—SHIPYARD ALTERATIONS—Dpt. Navy, P. Wks. Office, Phila. Naval Base, Phila., Pa., naval reserve shipyard alterations, $250,000.

Ind., East Chicago—KILN STRUCTURE—Harbison-Walker Refractory Co., 343 Kennedy Ave., 1 story, 60x546 ft., structural steel, kiln structure, $100,000. Wm. E. Fett, Washington St., Mishawaka, consult. engr.

Ind., Evansville—MOTEL—Traylor Bros., Inc., Upper Mt. Vernon Rd., 3 story, brick motel, State Rd. 41, $750,000. Van Orman Hotels Co., Harold Van Orman, pres., McCurdy Hotel, 101 S.E. First St., lessee.

Md., Baltimore — ZOO BLDG. — City, Bureau Bldg., Constr., 410 Municipal Bldg., plans by Cyril H. Hebrank, 20 E. Lexington St., 1 story, part bsmnt., brick, glass zoo bldg., Druid Hill Park, $200,000. Sandlass, Wieman & Assoc., 1021 N. Calvert St., struct. engrs. James Posey, 10 E. Pleasant St., mech. engr. R. E. L. Williams, 410 Municipal Bldg., bldg. constr. engr. CD 1/27/44.

Nebraska — RURAL DISTRIBUTION LINES — Consumers Public Power Dist., Columbus, imprv. Chadron-Crawford lines with new tie lines, sub-stations and addl. equip., $300,000; rebuild Ogallala-Big Springs transmission lines and provide sub-station, $135,226; rebuild Chadron-Rushville lines to handle 115,000 volt operation, $190,000. R. L. Schacht, c/o owner, ch. engr.

▲ **South Dakota** — RURAL DISTRIBUTION LINES — Moreau Grand Electric Co-operative, Timber Lake, 1,067 mi. rural distr. lines, two-way radio and completion of previously approved construction in Dewey and nearby counties. $1,300,000. Scott Eng. Co., Watertown, consult. engr.

▲ **Washington** — DAM, etc.—Lewis County Public Utility Dist. Chehalis, 80 ft. high dam and hydro-electric plant at Packwood Lake, $7,000,000. W. S. McCrea, Jr., Perkins Bldg., Tacoma, consult. engr.

Sask., Regina—LIVESTOCK STABLES, etc.—Regina Exhibition Assn., City Hall, livestock stable-sales arena at fairgrounds, $500,000.

How to keep a batch of concrete from becoming a batch of trouble

Even a minor breakdown can cost you hundreds of dollars when you're hauling ready-mix concrete.

But the owner of the truck above isn't worried. He has an International working for him. He knows he can depend on an International to stay on the job even in the toughest going.

Heavy-duty engineered stamina

Every International Truck is heavy-duty engineered to stand up under punishment.

This means that extra strength and toughness are built into every truck part. You get the maximum in trouble-free operation and the long life that have kept Internationals first in heavy-duty truck sales for 18 straight years.

. . . Plus a new world of comfort

No wonder the new Comfo-Vision Cab offers so much comfort—drivers themselves helped design it.

You get more head room, leg room, and foot room in the "roomiest cab on the road." You get full front visibility through a one-piece, curved Sweepsight windshield. You get an easily adjustable seat packed with comfort.

And just wait until you take the wheel. New Super-steering and Super-maneuverability give you more positive control from a more comfortable position and enable you to turn in shortest practical circles.

Get the full story NOW

The world's most complete line of trucks offers you exactly the right model for your job. Ask your nearest International Truck Dealer or Branch for complete information.

International Harvester Builds
McCormick Farm Equipment and Farmall Tractors
Motor Trucks . . . Industrial Power
Refrigerators and Freezers

Heavy-Duty Engineered

INTERNATIONAL TRUCKS

INTERNATIONAL HARVESTER COMPANY CHICAGO

CONSTRUCTION REPORTS—Second Section

WATER SUPPLY

BIDS ASKED

N. J., Tewksbury Twp.—B.A. 11/2—Bd. Educ., Mountainville School, Tewksbury, drilling well for new school.

SEWERS, WASTE DISPOSAL

BIDS ASKED

▲ **Md., Baltimore**—B. A. 10/31—State Rds. Comn., E. 108 E. Lexington St., Zone 2, installing storm sewer outfalls, adjacent to Georgia Ave., along Hildarose Ave., Windham Lane and surrounding vicinity, in Silver Spring, Contr. M 435-5-315, Montgomery Co. Plans deposit $5. Wm. F. Childs, Jr., 108 E. Lexington St., Zone 2, ch. engr.

Minn., Silver Lake—B. A. 11/2—Village, H. F. Chalupsky, clk., sanitary sewer collection sys., sewage treatment plant. $50,000. Plans deposit $20. Hitchcock & Estabrook, 521 Sexton Bldg., Minneapolis, engrs. CD 10/17.

N. Y., Manhasset—B. A. 11/2—North Hempstead Housing Auth., Valley School, sanitary sewers for Spinney Hill Homes.

Okla., Anadarko—B. A. 11/2—City, sewage disposal plant. $225,000. Plans deposit $15. C. H. Guernsey & Co., 1414 N. Robinson St., Oklahoma City, engrs.

Wis., Iola—B. A. 11/2—Village, Contr. 1, sanitary sewers and watermains; Contr. 2, sewage treatment plant and sewage pump station; Contr. 3, gravel wall well; Contr. 4, WW pump station; Contr. 5, steel elevated storage tank; Contr. 6, deep well pump. Plans deposit $15. McMahon Eng. Co., Menasha, engr.

Wash., Spokane—B. A. 11/9—City, City Hall, Sect. E, Ohio Ave. section intercepting sewer, $500,409. Plans deposit $10. C. E. Davis, city engr. CD 4/30/46.

CONTRACTS AWARDED

▲ **Md., Baltimore**—City, Bureau Sewers, 312 Municipal Bldg., one 2, Contr. 391, Sect. A, furnishing materials constr. brick, concrete, structural steel bldg. to house sludge drying equip., etc., to Chesapeake Contractors, Inc., 1301 Towson St., Zone 1, $1,386,200; Sect. B, furnishing driving approx. 9,000 lin. ft. cast in place piles, constr. radial brick, stack approx. 350 ft. high and related work Back River Sewage Treatment Plant, to Cantodis Constr. Co., 25 Broadway, New York, N. Y., $532,000. Bids 10/4, awarded 10/12. CD 10/10, under LB.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

November 3	November 10
Missouri	Tennessee
November 8	November 14
California	Oklahoma

Kan., Ulysses—B.A. 11/6—Grant Co., bridge over Cimarron River, $100,000. Plans deposit $10. R. S. Delamater, 311 Derby Bldg., Wichita, Zone 2, consult. engr.

New Jersey and Pennsylvania—B. A. 11/9—Delaware River Joint Toll Bridge Comn., 526 Broad St. Bank Bldg., Trenton, 8, N. J., constr. Trenton approach to Delaware River bridge from Morrisville, Pa., to Trenton, N. J. Plans deposit $5. J. E. Greiner & Co., 1201 St. Paul St., Baltimore, 2, Md., engrs.; adv. ENR 10/26. CD 2/4/49.

† **Louisiana**—B.A. 11/10—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, 52 ft. timber, steel Charenton Floodgate Bridge, approx. 12 ft. wide, rein. con., retaining walls and earth fill, at Charenton Floodgate in West Atchafalaya Basin Protection Levee, approx. 1 mi. north of Charenton, St. Mary Parish, CIVENG 16-047-51-61.

New Jersey and Pennsylvania—B.A. 11/16—Delaware River Joint Toll Bridge Comn., 526 Broad St. Bank Bldg., Trenton, Zone 8, constr. administration bldg. and toll collection facilities for Delaware River Joint Toll Bridge Comn., in Morrisville, Pa. Plans deposit $15. J. E. Greiner Co., 1201 St. Paul St., Baltimore, 2, Md., engrs. CD 2/4/49.

LOW BIDDERS

▲ **Georgia**—State Hy. Dept., Atlanta, rejected bids Sept. 29, superstructure Turtle River Bridge, Glynn Co., L. B. $1,726,448. CD 10/5, under LB.

Indiana—State Hy. Comn., Indianapolis, Oct. 17, 3 span 160 ft. continuous steel beam bridge over Big Sugar Creek west of State Rd. 9, 28 ft. roadway incl. approach grading, bit. compacted aggregate surf. 0.31 mi. Rural District, Hancock Co., and 2 rein.-con. box culverts 12'x14'x8'x8 ft. respectively, over Deep Creek and swine, 44 ft. roadways, incl. 0.232 mi. and 0.265 mi. respectively approach grading, bit. compacted aggregate surf., S.W. of Mt. Vernon, Posey Co., from Winslow Constr. Co., Salem, $77,996, est. $80,003 and $120,937, est. $157,279 respectively*** span 100 ft. rein.-con. girder twin structures over Northcote Ave., and 7 span, 280 ft. steel beam, rein.-con. girder over C & O and Erie Rys., Hammond, Lake Co., from Arcole Midwest Corp., Evanston, $693,770, est. $810,963***12 span, 1,500 ft. continuous steel plate girder bridge over West Fork of White River, and 1 span 40 ft. rein.-con. girder, 28 ft. roadway, west of Martinsville, Morgan Co., from Ryan Constr. Corp., W. Michigan St., Evansville, $588,886, est. $675,203***1 span 50 ft. rein.-con. arch bridge over Honey Creek, approach grading, bit. compacted aggregate surf. 0.543 mi. East of Terre Haute, Vigo Co., from J. L. Wilson, Bloomield, $81,941, est. $97,062. CD 9/28.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

October 31	November 8
Massachusetts	California
November 2	November 9
New Jersey	California
November 3	November 10
Missouri	Pennsylvania
November 14	
Oklahoma	

New Jersey—B.A. 10/31—New Jersey Turnpike Auth., 65 Prospect St., Trenton,

Mercer and Burlington Counties—Contr. 61, approx. 21 mi. Turnpike pavement of either c. conc. or b. conc. comprising two 24 ft. wide roadways with paved shoulders and grass median strip, together with pavement, of Mt. Holly and Bordentown interchanges and of drainage, gutters, curbing, top-soiling and incidental work in connection with N. J. Turnpike Sect. 3, Morristown and Allentown, Plans deposit $5. Extended date.

Ill., Macomb—B. A. 11/2—City, paving sections 9 streets. $81,000. CD 8/4.

New Jersey—B. A. 11/10—New Jersey Turnpike Auth., 65 Prospect St., Trenton.

Middlesex and Union Counties—Contr. 63, paving and shoulders for entire Sect. 5 of N. J. Turnpike, 14.2 mi. dual roadway both 4-lane and 6-lane, interchange (3) paving, pavement drainage sys., railroad track grading, removal of overlead, topsoiling and reconstr. certain facilities at an adjacent military post, Raritan and Woodbridge Twps., Carteret and Linden. Plans deposit $5. Fay, Spofford & Thorndike, 25 Livingston Ave., New Brunswick, engrs. CD 7/13/49.

Fla., Jacksonville—B.A. 11/9—City, City Hall, wid'n., repaving Mary St. from San Marco Blvd. to Smith St. with c. conc. parking strip and integral curb. Adv. 10581 City Engineers, Engineers Bldg., engrs. CD 1/18/45.

LOW BIDDERS

▲ **New Jersey**—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Oct. 18, Contr. 62, constr. pavement for turnpike by, and pavement for 34 cross roads, work appurtenant on Sect. 4 of N. J. Turnpike, between Allentown and the Raritan River, Mercer and Middlesex Counties, from George M. Brewster & Sons, 275 W. Fort Lee Rd., Bogota, asphalt, $7,662,276; concrete, $9,350,426.

New Jersey—State Hy. Dpt., Trenton, Oct. 17, grading, drainage, 2 bridges, paving 0.6 mi. Route 151, Sect. 1-B Federal Sec. to Pennsylvania-Reading Seashore Lines (Wright Ave.) Fed. U-69 (15), Camden Co., from Francis A. Canuso & Son, 804 S. 12 St., Phila., Pa., $968,651. Est. $1,250,000. CD 9/27.

▲ **Texas**—State Hy. Comn., Austin, Oct. 17, soil asph. base, one course surf. tr. 7.689 mi. Hy. FM 1464 R 1415-2-1, Fort Bend Co., from John F. Buckner & Sons, P. O. Box 76, Cleburne, $92,123, est. $118,000 ***flexible base, two course surf. tr. 9.918 mi., RV 1500-1-1, Frio Co., from McKown & Sons, P. O. Box 785, Austin, Zone 2, $66,388, est. $75,000***flexible base, prime, one course surf. tr. 8.516 mi., Hy. FM 1481, RV 1574-1-1, Bandera Co., from Howard Bros. Madisonville, and R. B. Butler, Inc., Bryan, $166,270, est. $160,000***flexible base, two course surf. tr. 12.872 mi. Hy. FM 209, R. 1076-2-2, Young Co., from Ned B. Hoffman, 617 Fort Worth Club Bldg., Fort Worth, Zone 2, $133,423, est. $167,000*** flexible base, one course surf. tr. 11.117 mi., Hy. FM 1241, Proj. R 855-8-1, Hamilton Co., from H. B. Zachary Co., P. O. Box 2570, San Antonio, $100,889, est. $116,000***fdn. course, two course surf. tr. 8.933 mi., Hy. FM 1358, R. 12-6-1-1, Live Oak Co., from Dudley R. Cloud, 1903 Transit Tower, San Antonio, $94,036, est. $70,000***flexible base, one course surf. tr. 5.406 mi. Hy. FM 1489, R 1418-1-1, Waller Co., and flexible base, one course surf. tr. 4.622 mi. Hy. FM 1011 and 1411, Proj. 114b-2-1, Liberty Co., from Brown & Root, Inc., P. O. Box 3, Houston, $67,115, est. $65,000 and $102,538, est. $120,000, respectively***fdn. course, one course surf. tr. 9.212 mi., Hy. FM 1378 and 1379, R 1392-1-1, Collin Co., from R. W. McKinney, P. O. Box 190, Nacogdoches, $141,019, est. $158,000***flexible base, two course surf. tr. 5.843 mi., Hy. FM 1537, R 1476-2-1, Hopkins Co., and flexible base, two course surf. tr. 4.366 mi., Hy. FM 1259, S 1365 (1), Red River Co., from Dew Constr. Co. Inc., P. O. Box 641, Tyler, $79,115, est. $72,000 and $76,530, est. $74,000 respectively***flexible base, asph. surf. tr. 12.237 mi., Hy. SH 51 and Spur 233, S. 1510 (3) and (2), Oldham and Hartley Counties from Strain & Brown, Inc., P. O. Box 1057, San Angelo, $297,071, est. $365,000***flexible base, hot mix b. conc. 7.857 mi., Hy. US 75, C 47-3-16, Grayson Co., from City Constr. Co., 426 Reserve Loan Life Bldg., Dallas, $454,477, est. $290,000***grading, structures, pavement 0.475 mi. Hy. US 81, Proj. UI 1083 (11), Bexar Co., from Austin Bridge Co., P. O. Box 1590, Dallas, $1,134,747, est. $785,000***flexible base, one course surf. tr. 3.366 mi. Hy. FM 417, R 810-1-2, Shelby Co., from McMillin-Burkett Constr. Co., P. O. Box 450, Texarkana, $59,234, est. $69,000***grading, structures, flexible base 15.622 mi. Hy. SH 39, Proj. S 639 (2) and (3), Real and Kerr Counties, from E. E. Hood & Sons, 521 Barrett Ave., San Antonio, $108,469, est. $117,000 ***fdn. course, one course surf. tr. 5.517 mi. Hy. FM 42, R. 129-1-4, McCulloch Co., from Killian-Keller Co., P. O. Box 1981, San Antonio, Zone 6, $69,933, est. $75,000***road bed tr. c. conc. and M. K. T. R.R. and Old U. S. 79 underpass, 2.578 mi. F-113 (11), Hill Co., from Austin Bridge Co., 1000 Singleton Blvd., Dallas, and Worth Constr. Co., P. O. Box 1590, Fort Worth, $945,716, est. $850,000. CD 10/5 and 10/11.

CONTRACTS AWARDED

▲ **New York**—Bureau Contracts & Accounts, Albany, 3.68 mi. Mt. Read Blvd. in city of Rochester, Monroe Co., to Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo, $2,178,676. Bids 7-12. CD 7/14, under LB.

▲ **New York**—President Queens Boro, Boro Hall, 120-55 Queens Blvd., Kew Gardens, Zone 15, grading, construct retaining walls, drainage facilities and grade separation structures, etc. in Connecting Hy. from Northern Blvd., to approx. 100 ft. north of 32 Ave., to Tully & DiNapoli, Inc., 30-11 12 St., Long Island City, $1,440,656. Bids 8/29. CD 9/8, under unclassified, LB.

▲ **Pennsylvania**—State Hy. Dpt., Harrisburg, construct divided highway consisting of rein.-con. pavement 24 ft. wide, on each side of concrete divisor incl. construction thru truss highway underpass, 3 rein.-con. arches, exten. existing arch, construct two I-beam bridges, rein.-con. pavement 46 ft. and variable in width, misc. constr. 16,251 ft. L. R. 77 (7A), T. R. 18, from point in city of Beaver Falls, northerly through Homewood and Kopple Boros, Beaver Co., to B. Nerini & Sons Inc., Framingham, Mass., $2,967,108. Bids 9/29, awarded 10/17. CD 10/3, under LB.

EARTHWORK, WATERWAYS

BIDS ASKED

Connecticut—B.A. 10/30—State, R. S. Thatcher, comptroller, State Capitol, Hartford, rebuilding dike and constr. water control structure, Charter March, B/A-BB-39, Tolland, $30,000.

Minn., Mantorville—B.A. 11/6—Dodge Co., A. Lampland, aud., grade, crushed rock base 0.8 mi. between Main St. in Concord, 0.8 mi. northeast, 12,002 cu. yd. excav. and 1,500 cu. yd. crushed rock base in place, S. P. 20-507-03, Minn. Proj. S 302 (2); grade, crushed rock base and conc. box culverts, 4.8 mi. between S.A.R. 16, 4.8 mi. west of West Concord and west limits of West Concord, 76,202 cu. yd. excav., 1 new concrete box culvert, 45 cu. yd. concrete, 1 concrete box exten., 63 cu. yd. concrete, and 7915 cu. yd. crushed rock base, $50,000. Plans deposit 55c and $1.25. G. H. Nelson, co. hy. engr.

† **Washington**—B.A. about 11/2—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, Second Stage construction, Chief Joseph Dam, Bridge, port, incl. construction of dam, training walls, stilling basin, access roads and Hys., embankments and slope protection, etc. and preliminary excavation for powerhouse and intake structures. Serial No. CIVENG 45-108-51-12. CD 9/12/44.

† **Mississippi**—B.A. 11/2—U. S. Eng., P. O. Box 60, Vicksburg, approx. 457 stations levee and dikes and constr. approx. 77,700 cu. yd. earthwork on east bank Mississippi River in Bolivar Co., CIVENG 22-052-51-50.

† **Montana**—B.A. 11/2—Bureau Reclamation, Bldg. 1 A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Louisville, misc. structural steel and handrails for Canyon Ferry Power Plant, Helena-Great Falls Div., Canyon Ferry Unit, Missouri River Basin Proj., Spec. DS 3217. Bids 9/21 rejected. CD 10/10.

† **Oregon**—B.A. 11/2—U. S. Eng., 628 Pittock Block, Portland, Zone 5, diversion tunnel and relocation sect. railroad for temporary construction use on Big Cliff Dam, approx. 10 mi. east of Mill City, and 6 mi. west of Detroit, Serial No. CIVENG 35-026-51-73.

† **Pennsylvania**—B.A. 11/2—U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore 3, Md., clearing, snagging, Milton, Serial No. CIVENG 18-020-51-2. CD 10/3.

† **Oregon**—B.A. 11/3—U. S. Eng., 628 Pittock Block, Portland, Zone 5, clearing areas "H" and "G" in Detroit Dam Reservoir on North Santiam River, Serial No. CIVENG 35-026-51-74.

† **Montana**—B.A. 11/14—U. S. Eng., Admin. Bldg., Fort Peck, removal concrete, steel reinforcement structural steel to provide accessways approx. 3 ft. wide, 4 ft. high, 7 ft. long in 15 piers and 2 abutments, finishing surfaces by bush-hammering and grouting, install removable steel plate shoe guides at Spillway Gate Structure, Fort Peck, Fort Peck Dam Spillway on Missouri River, approx. 25 mi. southeast of Glasgow, CIVENG 24-016-51-3.

† **California**—B.A. 11/9—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Lompoc, steel pipe, rings, manholes, flanges, drains and accessories for outlet works at Cachuma Dam, Cachuma Proj., Spec. DS-3213. L. N. McClellan, ch. engr.

AIRPORTS

BIDS ASKED

† **Md., Patuxent River**—UNDERGROUND CABLE—B.A. 11/1—P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., install approx. 3,000 ft. burial type electric underground cable in vicinity of Control Tower Bldg. 112 at Naval Air Station, Spec. 25536.

†**Va., Oceana**—ROAD REPAIRING, etc.—B.A. 11/1—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, repairing, resurf. road at U. S. Naval Auxiliary Air Station, Spec. 25579. Plans deposit $10.

LOW BIDDERS

▲†**Me., Limestone**—HEATING PLANT—Dpt. Army, P.O. Box 2316, Boston, Mass., central heating plant at Air Force Base, from Stewart & Williams, Inc., 185 Water St., Augusta, $1,337,400.

CONTRACTS AWARDED

▲† **Miss., Biloxi**—LABORATORY—U. S. Eng., 2301 Grant St., Mobile 7, Ala., electronic laboratory and barracks at Keesler Field, to Ewin Eng. Corp., P. O. Box 361, Mobile, Ala., approx. $6,000,000. J. B. Converse Co., Inc., First Federal Savings Bldg., Mobile, Ala., engr. Harry Inge Johnstone, Annex First National Bank Bldg., Mobile, Ala., archt.

FOREIGN

New Zealand—Ministry of Wks., Wellington, and may be submitted through the New Zealand Trade Comr., Dupont Circle Bldg., 1346 Connecticut Ave., Wash. 6, D. C., U. S. A. receives bids Jan. 9, approx. 5 mi. 37.33 chains of single-track concrete-lined railway tunnel, with approx. 1 mi. 75 chains of approach formation, to be known as the Rimutaka Tunnel Contr. for the Wellington-Wairarapa Railway Deviation; adv. ENR 10/26.

LATIN AMERICA

Brazil, Sao Paulo—Companhia Brasileira de Plastico "Koppers", Sao Paulo, awarded contract mfg. plant near here to produce 3,000,000 lb. annually of polystyrene plastic, to Koppers Co., Inc., Koppers Bldg., Pittsburgh, Pa., U. S. A.

Mexico, Rio Fuerte—Mexican Govt., Srta. de R. H., Reforma, 69, Mexico City, receiving bids Nov. 14, derivation dam. Plans deposit $23.12.

PUBLIC BUILDINGS

BIDS ASKED

† **Del., Wilmington**—CHAPEL—B.A. 10/31—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., chapel in main Bldg. 1 for Veterans Hospital, Spec. 50124, Proj. No. 2449.

N. Y., Bohemia—HIGH SCHOOL—B.A. 10/31—Bd. Educ., Union Free School Dist. 7, Town of Islip, School House, Smithtown Ave., high school, Smithtown Ave. and Church St.

Pa., Bedford—SCHOOL—B.A. 10/31—School Dist. of Bedford Twp., Route 220, 1 and 2 story, 76x131 ft. steel, brick and tile school addn., alterations, in Bedford Twp., near here. $250,000. Sorber & Moone, 711 1st. Nat. Bank Bldg., Greensburg, archts.

Wis., Oregon—SCHOOL—B.A. 10/31—School Bd. Joint Dist. 1, 1 story U-shaped, 156x325 ft., rein.-con., steel, brick, block high-grade school addn. $250,000. Durrant & Birquist, Boscobel, archts. CD 9/29.

▲**Ala., Auburn**—DORMITORY—B.A. About 11/1—Alabama Polytechnic Institute, Auburn, men's dormitory, $1,500,000. H. L. Holman, Ozark, Van Keuren, Davis & Co., American Life Bldg. and Pembleton & Mims, Title Guarantee Bldg., Birmingham, assoc. archts. CD 5/1.

Ga., Gainesville—HOUSING—B.A. About 11/1—Gainesville Housing Auth., Gainesville, 120 housing units for whites. Approx. $750,000. CD 1/19.

N. C., Winston-Salem—GYMNASIUM—B.A. About 11/1—City, Winston-Salem, Reynolds High School Gymnasium addn. $292,000. Northrup & O'Brien, Reynolds Bldg., archts.

▲ **S. C., Columbia**—OFFICE—B.A. About 11/1—State Hy. Dept., Columbia, office, $1,930,000. Hopkins, Baker & Gill, Florence, archts. CD 8/17.

Fla., Tallahassee—SANATORIUM—B.A. 11/1—Florida State TB Bd., Caldwell Bldg., W. T. Edwards TB Sanatorium. Approx. $250,000. CD 6/2.

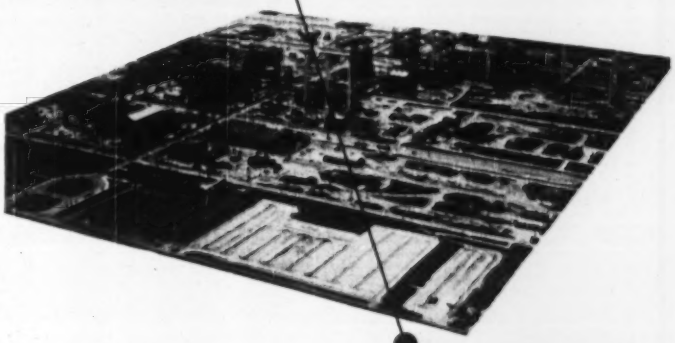
Ga., Demorest—HOSPITAL—B.A. 11/1—Habersham Co. hospital. Plans deposit $50. Extended date. David S. Cutting, Jr., Mortgage Guarantee Bldg., Atlanta, archt. CD 8/30.

N. Y., Hawthorne—SCHOOL—B.A. 11/1—Bd. Educ., Union Free School Dist. 7, Town of Hawthorne, School Bldg., school addn., Memorial Dr.

▲† **O., Cincinnati**—LABORATORY—B.A. 11/1—Pub. Bldgs. Admin., 18 and F Sts. N. W., Wash. 5, D. C.,

The Building

E. I. DU PONT DE NEMOURS & CO. (INC.)
. . . ORANGE, TEXAS



The Pile . . .

THE ARCHITECTS and BUILDERS
E. I. Du Pont de Nemours & Co. (Inc.)

31,197 Ft. of MacArthur Cased Concrete Piles . . .

To meet their own exacting specifications for sound foundation construction, the Du Pont architects and engineers called for Mac Arthur cased concrete piles for their Orange, Texas plant.

This Du Pont plant is another of the thousands of examples where building factors have found it 'pays to put it up to Mac Arthur.

Whether your pile requirements call for cased or cast concrete, composite, wood, steel or pipe piles, you will find the 40 years of Mac Arthur experience will pay off for you, too.

Free Booklet

Learn more of the MacArthur story. You will find it in an eight-page booklet available to you. Information about piles, equipment, and jobs is yours for the writing—just ask for, 'Mac ARTHUR.'

THE MacARTHUR CONCRETE PILE CORPORATION
18 East 48th Street, New York 17, N. Y.
New Orleans Cincinnati Boston

4 story, bsmnt, subbsmnt., penthouse, approx. 50x350 ft., with approx. 70x480 ft. with part sub-subsmnt., approx. 70x100 ft. with 1 story wing for 160 seat assembly, laboratory bldg., rein.-con. face brick, limestone, steel for U. S. Pub. Health Service, $3,250,000. Extended date. CD 9/15.

Pa., Dixmont—BOILER PLANT, etc.—B.A. 11/1—General State Auth., 18 and Herr Sts., Harrisburg, general constr.; heating, plumbing; electrical boiler plant at Dixmont State Hospital, $500,000 and general constr. heating, electrical for constr. tunnel and steam distr. sys., $300,000. Plans deposit $10 each. J. E. Burke & Assoc., Magee Bldg., Pittsburgh, engrs. CD 9/29/49.

Pa., Edinboro—DORMITORIES—B.A. 11/1—General State Auth., 18 and Herr Sts., Harrisburg, general constr., heating, plumbing, electrical work new men's dormitory and women's dormitory at Edinboro State Teachers College. $600,000. Plans deposit $10 each. Meyers & Krider, 407 Commerce Bldg., Erie, archts. A. F. Jones, c/o owner, ch. engr. CD 12/23/49.

Ga., Rome—HOUSING—B.A. 11/2—Rome Housing Auth., c/o Poundstone, Ayers & Godwin, archts., Bona Allen Bldg., Atlanta, 200 unit housing, Projects GA 5-3 and GA-54. Extended date. CD 10/9.

Ind., Decatur—GENERATING UNIT—B.A. 11/2—City, diesel engine driven generating unit 3500 kw. for municipal electric plant. Plans deposit $10. Emery, Macker & Emery, 510 Toledo Trust Bldg., Toledo, O., engrs. CD 7/14/49.

Kan., Ulysses—SCHOOL—B. A. 11/2—Bd. Educ., Ulysses, high school. $475,000. Hibbs & Robinson, 519 S. Broadway, Wichita, archts. CD 5/2.

Ore., Springfield—HIGH SCHOOL—B. A. 11/2—School Dist. 19, Springfield, Junior High School. $650,000. Freeman, Haystip & Tuft, 2040 S.W. 3 St., Portland, archts. CD 12/28.

Pa., Lewiston—SCHOOL—B. A. 11/2—Pub. School Bldg. Auth., 1400 N. Cameron St., Harrisburg, school bldg., for Lewiston Boro School. $500,000. Plans deposit $25 general, $10 each others. Hunter, Caldwell & Campbell, 3601 5 Ave., Altoona, archts. W. W. Behrens, c/o owner, ch. engr. CD 9/11/45.

▲ **Va., Blacksburg**—ENGINEERING LABORATORY—B.A. 11/2—At office S. K. Cassell, Blacksburg engineering laboratory at Virginia Polytechnic Institute for State of Virginia, Richmond. $1,000,000. Plans deposit $25. Carneal & Johnston, Atlantic Life Bldg., Richmond, archts.

Va., Petersburg—HOME ECONOMICS—B.A. 11/2—State of Virginia, Richmond, home economics bldg. at Virginia State College. J. Binford Walford & O. Pendleton Wright, 103 E. Cary St., Richmond, archts.

Wash., Everett—HOUSING—B.A. 11/2—Everett Housing Auth., Community Bldg., 14 and Poplar Sts., 150 dwelling units at Baker Heights addn., Wash. 6-2. Plans deposit $35. H. W. Hall & Assocs., Commerce Bldg., archts.

W. Va., Lakin—BOILER HOUSE—B.A. 11/2—State Bd. Control, c/o Frampton & Bowers, archt., 414 Eleventh St., Huntington, boiler house at Lakin State Hospital. Plans deposit $50.

▲ **N. J., Lodi**—HOUSING—B.A. 11/6—Lodi Housing Auth., Lodi, DeVries Park Housing. Extended date. CD 9/19.

▲ **Tex., Amarillo**—HIGH SCHOOL—B. A. 11/6—Amarillo Independent School Dist., Amarillo, 1 and 2 story, 120,000 sq. ft. structural iron frame Junior High School, pier and beam fdn. $1,500,000. Plans deposit $50. Emmet F. & James F. Rittenberry, 1000 Fisk Bldg., archts. CD 3/2.

Tex., Nederland—OFFICE, etc.—B. A. 11/6—Nederland Independent School Dist., Nederland, masonry, steel office, laboratory, home economics, concrete pier and beam fdn. $300,000 masonry, steel gymnasium, $250,000. Maurice Walter Gilbert Bldg., Beaumont, archts.; Johnson & Kelley, Scanlan Bldg., Houston, engrs.; structural steel, brick, hollow tile school, concrete pier and beam fdn., $350,000; Johnson & Kelley, Scanlan Bldg., Houston, engrs. and archts. CD 12/7/49.

▲ **Ont., Fort William**—HOSPITAL—B. A. 11/6—McKennar General Hospital Bd., C. R. Strachan, chn., 6 story, T-shaped, 46x119 ft. and 50x115 ft., rein.-con. hospital addn. $1,800,000. Plans deposit $25. Govan, Ferguson, Lirdsay, Kamineer, Maw, Langley & Keenleyside, 515 Jarvis St., Toronto, archts.

La., De Ridder—SCHOOL—B.A. 11/7—Parish School Bd., De Ridder, high school. Plans deposit $50. Barron, Heinberg & Brocato, 512 Guaranty Bank Bldg., Alexandria, archts. CD 1/19.

Tenn., Knoxville—HOUSING—B. A. 11/7—Knoxville Housing Auth., c/o Barber & McMurry, archts., 2375 Kingston Pike, 444 unit addn. to Western Heights Housing. Plans deposit $100.

▲ **Tex., Brownsville**—DWELLINGS—B.A. 11/7—Brownsville Housing Auth., Brownsville, 128 dwelling units, brick walls, concrete slab fdn., admin. bldg., site improvs. $1,100,000. Plans deposit $50. Boese & Harkrider, T & P Passenger Station, Forth Worth, archts. CD 10/5.

Ore., Hood River—HIGH SCHOOL—B. A. 11/8—Hood River School Dist., Court House, Consolidated High School. $450,000. Annand, Kennedy & Boone, Central Bldg., Portland, archts. CD 9/11.

† **Wash., Richland**—LABORATORY—B.A. 11/8—General Electric Co., prime contractor to U. S. Atomic Energy Comn., for operation of Hanford Works, Richland, 2 story, 122x217 ft. rein.-con., steel frame laboratory. Plans deposit $50.

Calif., Salinas—HOSPITAL—B.A. 11/9—Salinas Valley Memorial Hospital Dist., Court Hous, 139 bed 5 story, bsmnt., structural steel, rein.-con. hospital. Approx $250,000. Plans deposit $100. Robt. Stanton & Chester A. Phillips, Box 2177, Carmel, archts. CD 4/20/49.

▲ **Puerto Rico—San Juan**—LIBRARY—B.A. 11/10—University of Puerto Rico, San Juan, library. $1,000,000.

LOW BIDDERS

▲ **Ark., Little Rock**—HOUSING—Little Rock Housing Auth., Oct. 12, 400-unit housing for negroes, from Farnsworth Chambers Constr. Co., 3018 Leeland St., Houston, Tex., $3,192,257.

▲ **Calif., San Francisco**—COLLEGE OF LAW—Bd. Regents, University of California, Berkeley, Oct. 10, general contract 90x165 ft., 77,320 sq. ft., rein.-con. Hastings College of Law, from Erbentraut & Summers, 696 Pennsylvania St., San Francisco, $1,017,900. CD 9/13.

▲ **Conn., Bridgeport**—HOUSING—City Housing Auth., H. C. Poole, exec. dir., 252 Hallett St., 280 unit steel, concrete low rent housing, Charles F. Greene Homes, Lexington Ave. Section, from E & F Constr. Co., 49 Wells St., Bridgeport, $3,033,000. CD 9/19.

Ga., Albany—HOUSING—Albany Housing Auth., c/o Dennis & Dennis, Richard V. Richard, assoc. archts., Albany, Oct. 10, 125 housing units, from Byck-Worrell Constr. Co., c/o archts. $847,000. CD 9/22.

▲†**Idaho, Arco**—OFFICE—Westinghouse Electric Corp., Atmonic Power Div., Box 1468, Pittsburgh, Pa., Oct. 12, 133x155 ft. office and laboratory, 36x62 ft. gate house and office bldg., sewage treatment facilities, 180x80 ft. service bldg., 17x113 ft. pumphouse, oil storage tanks, etc. for Testing Facilities Sub-contract 73-14-23, for Atomic Energy Comn., Idaho Falls, from M. J. Brock & Sons, Inc., 2894 Rowena Ave., Los Angeles, Calif., $1,018,000. CD 0/22.

Ill., Chicago—HOSPITAL—Cook Co. County Bldg., rebuilding, expanding Cook County T. B. Hospital, from M. J. McDermott Co., 30 N. La Salle St., Zone 2, $517,594. Raymond Houlihan, 30 N. Dearborn St., Zone 2, archt. CD 12/21/48.

▲ **Ill., Chicago**—APARTMENT, etc.—Medical Center Comn., 809 S. Marshkfield St., Zone 12, 10 story, 145 unit, brick, rein.-con. staff apartment and residence hall, from James McHugh & Son, Inc., 6449 S. Park Ave., Zone 37, $2,135,750, est. $2,000,000 ***residence hall only, from Geo. Sollitt Constr. Co., 333 N. Michigan St., Zone 1, $1,187,768***apartment only, from J. J. Duffy Constr. Co., 4944 Elston St., Zone 39, $906,806. CD 9/20.

Ill., Palatine—SCHOOL—High School Dist. 211, 2 story, bsmnt., 70x200 ft. steel, concrete, brick, stone high school addn., from John Troff Constr. Co., 3735 N. Clark St., Chicago, Zone 13, $657,013. CD 9/25.

Md., Silver Spring—SCHOOL—Bd. Educ., Montgomery Co. Bldg., Rockville, Oct. 12, Montgomery Blair High School addn., 501 Dale Dr., from Byrne Organization, 2667 Conn. Ave. N.W., Wash., D. C., $719,000. Est. $700,000. CD 10/2.

Md., Upper Marlboro—SCHOOL—Prince Georges Co. Bd. Educ., Court House, brick, limestone, concrete, cinder block, steel Surrattsville Junior Senior High School addn., Surrattsville from B. & J. Constr. Co., 3432 Connecticut Ave. N.W., Wash., D. C., $565,318. CD 10/13.

▲ **N. J., Asbury Park**—HOUSING—Asbury Park Housing Auth., rejected bids Sept. 28, 76 family low-rent family housing on 5-acre site east of Asbury Park Village, LB. $758,917. CD 10/5, under LB.

▲ **N. Y., Flushing**—HOUSING—New York City Housing Auth. 63 Park Row, New York, Zone 7, Oct. 17, 1dns. (3 bldgs. only) and general contract for Flushing Houses (Proj. NYS 521), Long Island R.R., Lawrence St., Roosevelt Ave., Prince St. and westerly portions at 40 Rd. Main St. and Long Island R.R. from Corbetta Constr. Co., 220 E. 42 St., New York, Zone 17, $2,762,450***heating and ventilating, from H. Sand & Co., Inc., 11 Park Pl., New York, $295,469*** plumbing, from Paramount Plumbing & Heating Co., 323 E. 13 St., New York, $330,950. CD 9/28.

▲ **N. C., Wilson**—BUILDINGS—North Carolina Sanatorium, Dr. H. F. Eason, Wilson, Oct. 6, service bldg., south wing addn., nurses residences, 5 residences, 250 bed-colored wing, from Jones Bros., Wilson. $2,138,214. CD 9/13.

▲ **Pa., Altoona**—HOSPITAL—Blair Co., Hollidaysburg, Oct. 2, 1, 2, 3 story, bsmnt., 43x213 ft., 43x164 ft. and 43x227 ft. brick county home and hospital, Pleasant Valley Blvd., from Montgomery Constr. Co., 803 W. Main St., Grove City, $1,293,230. CD 9/12.

Pa., Kittanning—COURT HOUSE—Comrs. Armstrong Co., Court House, Sept. 30, 3 story, 50x105 ft., brick court house addn. from Fred Lundgren, R. D. 5, Kittanning, $525,000. CD 9/20.

Pa., Scotland—HOUSING—General State Auth., 18 and Herr Sts., Harrisburg, rejected bids Sept. 6, general contract housing for boys of Pennsylvania Soldiers' Orphan School, LB, $555,324. Will re-advertise. CD 9/11, under LB.

▲ **Tenn., Knoxville**—HOUSING—Knoxville Housing Auth. 1701 Jourolomon Ave., rejected bids Oct. 10, Lonsdale Homes, L. B. $2,991,211. Bealer & Wilhoit, Mercantile Bldg., archts.

† **Va., Quantico**—BARRACKS—Dpt. of Army, First and Douglas Sts., N.W., Wash., D. C., Oct. 10, barracks, mess hall, roads and walks, near here, from F. H. Martel Co., Inc., 1023 20 St., N.W., Wash., D. C. $695,400.

▲† **Newfoundland, Argentia**—TRANSMITTER BLDG.—Dpt. of Navy, Bureau Yards & Docks Annex, Wash. 25, D. C., Oct. 17, transmitter bldg., vehicle shelter and related work, Spec. 23396, from Ayers-Hagan-Booth, Inc., 35 Westminster St., Providence, R. I. $1,249,000. CD 9/19.

▲ **Que., Ste. Foy (Quebec City)**—HOSPITAL—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Phase 4, 350-bed military hospital for Department Veterans Affairs, from A. Deslauriers et Fils Ltd., 68 Lafemant St., Quebec City, Approx. $4,777,012. CD 9/7.

CONTRACTS AWARDED

† **Colorado**—POWER PLANT—Bureau Reclamation, Dpt Interior, Bldg. 1-A, Denver Federal Center, Denver, constr. 35,000-kva Pole Hill Power plant, diversion and afterbay dams and access road, Estes Park-Foothills power aqueduct, Colorado-Big Thompson Proj., Spec. 3155, to Adler Constr. Co., Dickinson, N. D., $741,740. Bids 9/20. CD 9/29, under LB.

Conn., Norwalk—SCHOOL—City, City Hall, brick, steel school, Pillow St., to John Zandonella, 70 Chase St., Bridgeport, $504,000. Bids 10/4, awarded 10/10. CD 10/4.

Fla., Tallahassee—STUDENTS ACTIVITY, etc.—State Bd. Control, Tallahassee, student activity and 2 dormitories at Florida State University, to The Beers Constr Co., 70 Ellis St. N. E., Atlanta, Ga., $599,020. Bids 10/13. CD 9/14.

Ill., Galesburg—SCHOOLS—Bd. Educ., Galesburg, general contract school, Allen Park; L. T. Stone School addn., 3 smaller rural schools, Cameron, Coldbrook and Henderson Grove, to Galesburg Constr. Co., Galesburg, $539,770. Bids 10/3, awarded 10/10. CD 9/26.

Ill., Quincy—HOSPITAL—Blessing Hospital, Broadway and 10 Sts., 4 and 5 story, 110,000 sq. ft., steel, concrete, brick hospital addns., alterations, to Lloyds Builders, Inc., 61 W. Superior St., Chicago, Zone 10. $975,000. Bids 7/26. CD 8/17, under LB.

Ia., Ottumwa—SCHOOL—Independent School Dist., Ottumwa, general contract Charles D. Evans School, to Ringland-Johnson Inc., 820¼ Locust St., Des Moines, $909,212. Bids 10/5. CD 6/15.

▲†**La., Alexandria**—BUILDINGS—U. S. Eng., 2000 N. Memorial Dr., Tulsa 2, Okla., rehabilitation bldgs. at Alexandria Air Force Base, to R. P. Farnsworth & Co., 1515 S. Salcedo St., New Orleans, approx. $1,500,000.

Mass., Abington—SCHOOL—Town of Asington School Dpt., Junior High School adjacent to Senior High School, to Park Constr. Co., 40 Court St., Boston, $788,000. Bids 9/8, awarded 10/6. CD 9/19, under LB.

N. J., Secaucus—HOSPITAL WING—Hudson Co., Court House, Jersey City, wing for male patients at County Mental Diseases Hospital, to James Mitchell, Inc., 75 Montgomery St., Jersey City, $865,000. Bids 9/14, awarded 10/11. CD 9/21, under LB.

▲ **Va., Richmond**—HIGH SCHOOL—City, City Hall, Armstrong High School for Negroes, to Virginia Eng. Co., Newport News, $1,921,000. Bids 10/16. CD 9/5.

Ont., Uplands (Postal Dist. Ottawa)—BUILDING—Govt. of Canada, Dpt. Natural Defence, Cart.er Sq., Ottawa, remodeling accomodation for service personnel, to Doran Constr. Co. Ltd., 5 Concord St., Ottawa, $550,570. Canadian Commercial Corp., 70 Lyon St., Ottawa, engrs.

COMMERCIAL BUILDINGS

BIDS ASKED

Mich., L'Anse—HOSPITAL—B.A. 10/31—Baraga County Memorial Hospital, Bnjamin J. Grobeski, chn. Baraga Co. Hospital 1 Bd., general contract plumbing and heating, electrical work kitchen equip., laundry brick, steel hospital. Plans deposit $25 refundable to bidders, Joseph C. Goddeyns, Bay City Bank Bldg., Bay City, archt.

▲ **Pa., McKeesport**—HOSPITAL—B.A. 11/1—McKeesport Hospital, 1500 5 Ave., 9 story 45x185 ft., brick on tile, steel hospital addn. $1,500,000. H. J. Seeley, 55 Hazel Dr., Mt. Lebanon, archt. CD 11/16/45.

Ill., Lombard—RESIDENCES—Bids Asked—Owner, c/o L. J. Soucek, archt., 49 S. Washington St., Hinddale, 125 residences. $800,000.

SOON LETS CONTRACT

▲ **Pa., Pittsburgh**—SCHOOL—Carnegie Institute of Technology, Schenley Park, soon lets contract, 4 story bsmnt., L-shaped, brick, granite, steel school of Industrial Admin., in Schenley Park. $1,000,000. Mahler & Johnstone, Empire Bldg., archts. CD 9/6, under LB.

▲ **Tex., Dallas**—APARTMENT—B. A. 10/26—Park Plaza, Inc., c/o Smith & Mills, archts., 921 Mercantile Bank Bldg., soon lets contract, 9 story bsmnt. apartment. $1,000,000. CD 10/13.

LOW BIDDERS

Pa., Warren—HOSPITAL—Warren General Hospital, Warren, Sept. 21, 3 story 45x80 ft. brick hospital (2 wing addn.) from H. Platt Co., 1104 Sellinger Ave., Erie, $849,500. Est. $500,000. CD 9/11.

CONTRACTS AWARDED

Calif., Concord—RESIDENCES—Pacheco Co., c/o contractor, 69 residences in Pleasant Hills district, Gregory Gardens, to Goforth & McGaw, 247 Gregory Lane, $511,290.

Calif., Daly City—APARTMENTS—Henry Doelger, 320 Judah St., San Francisco, 28 apartments, incl. 240

units, 4 duplex bldgs., with 8 units in Westlake No. 3 and 4. Owner builds. $864,916.

Calif., Sacramento—RESIDENCES—George Reed, 1920 Stockton Blvd., 92 residences in Freeport Manor. Owner builds. $506,000.

▲Ill., Chicago—APARTMENT—American National Bank, 33 N. LaSalle St., Zone 2, 17 story, bsmt., rein.-con. incl. 220 unit apartment, to Lloyds Builders, 61 W. Superior St., Zone 10, $2,500,000. L. R. Solomon & Assoc., 61 W. Superior St., Zone 10, archts. H. S. Nachman, 179 W. Washington St., Zone 2, and Alfred Benesch, 30 E. Adams St., Zone 2, engrs.

▲ Ill., Chicago — HEADQUARTERS — Catholic Order of Forresters Madison and Franklin Sts., Zone 6, 4 story, bsmnt., 100x100 ft., steel headquarters bldg., to John Griffiths & Sons Co., 228 N. LaSalle St., Zone 1, $1,000,000. Awarded 10/13. CD 7/28.

Ill., Chicago—MISSION—Mission of Our Lady of Mercy, 1140 W. Jackson St., Zone 7, 3 story, 25,000 sq. ft. mission bldg. exten., gymnasium and dormitory, to Frank Burke & Son, 35 S. Dearborn St., Zone 3, $900,000. Bids 9/29, awarded 10/4. CD 9/27.

▲Ill., Chicago—DEPARTMENT STORE—Sears, Roebuck & Co., North Ave. and 16 St., Zone 35, 1-2-3 floors, 100,000 sq. ft. floor space department store, 1100 car parking and service to Jas. Stewart & Co., 231 S. LaSalle St., Chicago, Zone 4, $2,500,000. Bids 9/22, awarded 10/6. CD 9/18.

▲La., Shreveport—APARTMENT—J. A. Jones Constr. Co., 354 Aero Dr., apartment. Owner builds. $1,000,000.

▲ N. Y., Astoria—APARTMENTS—Queensview Housing Enterprises, Inc., c/o George Brown & Bernard Guenther, archts., 1860 Broadway, New York, Zone 23, 14 story apartment, south side of 33 Rd., east of 21 St., $500,000; 14 story apartment, north side of 34 Ave., east of 21 St., $500,000. Owner builds. CD 8/24.

▲ N. Y., Brooklyn—APARTMENT—Park Terrace Apartments, Inc., 17 Neptune Ave., Zone 29, 6 story apartment, 127.5x93 E. 5 St. Owner builds. $1,000,000. CD 7/13.

N. Y., Jackson Heights—APARTMENT—Jackson Development Co., c/o Leo Stillman, archt., 312 E. 149 St., New York, Zone 51, 6 story apartment, 34 Ave., 84 to 85 Sts. Owner builds. $625,000. CD 7/7.

▲ N. Y., New York—APARTMENT—Bennett Gardens, Inc., 1351 Boscobel Ave., apartment, 143-53 Bennett Ave. Owner builds. $1,000,000. CD 8/24.

▲ N. Y., New York—APARTMENT—Roswick Gardens, Inc., 1603 60 St., Brooklyn, Zone 4, 6 story apartment, Sedgwick Ave. south of 180 St. Owner builds. $1,547,000. CD 7/7.

S. D., Rapid City—HOSPITAL—St. John's McNamara Hospital, Rapid City, general contract hospital addn. to M. A. Garland Constr. Co., Rapid City, $548,767. Bids 8/30. CD 9/15, under LB.

▲ Va., Arlington—SHOPPING CENTER—The Hecht Co., F and 7 Sts., N. W. Wash. D. C., shopping center, etc. incl. 4 story bsmnt., 250,000 sq. ft., 170x300 ft. store, on 18 acre site, Wilson Blvd. and Glebe Rd., to Prescott Constr. Co., 1107 "W" St. N. W. Wash. D. C., Approx. $10,000,000. Abbott, Merkt & Co., 10 E. 40 St., New York, N. Y., consult. engrs. Kahn & Jacobs, 2 Park Ave., New York, N. Y. archts. CD 7/10.

Alta., Calgary—HOSPITAL—Calgary General Hospital, Calgary, west wing to hospital, to Bennett & White Calgary Ltd., 1120 9 Ave. W., $642,431. Awarded 10/2. CD 10/11/44.

Man., Winnipeg—OFFICE—Bank of Toronto, 456 Main St., 5 story, bsmnt., 80x115 ft., limestone, steel Western head office with main floor banking services, Portage and Notre Dame Sts., to Commonwealth Constr. Co. Ltd., 300 Royal Bank Bldg., Winnipeg, Approx. $900,000. Northwood & Chivers, 406 Nanton Bldg., archts. CD 4/14/49, under LB.

INDUSTRIAL BUILDINGS

BIDS ASKED

Pennsylvania—SERVICE STATION—B. A. 10/30—Gulf Oil Co., Gulf Bldg., 1 story bsmnt., 86x126 ft. stone service station and restaurant, on Pennsylvania Turnpike, Enon Valley. $250,000. P. R. L. Hagner, c/o owner, engr. CD 1/18.

Ont., Belleville—PLANT—B.A. 10/30—Coca-Cola Ltd., 90 Broadview Ave., Toronto, bottling plant. Approx. $100,000. Mathers & Haldenby, 15 St. Mary St., Toronto, archts.

Ga., Newman—WAREHOUSE, etc.—B. A. 10/31—Coweta-Fayette Electric Membership Corp., warehouse and office. Plans deposit $25. Southern Eng. Co., 1000 Crescent Ave. E., Atlanta, archts.

Ill., Chicago—PLANT—Bids Asked—Hall Printing Co., 4600 W. Diversey St., Zone 41, (selected list bidders) 120,000 sq. ft., brick, plant addn. $800,000. Edw. P. Steinberg, 180 W. Washington St., Zone 2, archt. CD 3/22/48.

SOON LETS CONTRACT

Neb., Lincoln—GRAIN ELEVATOR—Westcentral Cooperative Grain Co., Grain Exchange Bldg., Omaha, soon lets contract 2,250,000 bu. grain elevator. $900,000. Horner & Wyatt Co., Dwight Bldg., Kansas City, Mo., engrs. CD 9/12.

▲ Tenn., Chattanooga—PLANT—Quaker Oats Co., 141 W. Jackson St., Chicago, Ill., soon lets contract, mfg. plant. Approx. $1,000,000. CD 12/8/49.

CONTRACTS AWARDED

▲ Ky., Louisville—ELECTRIC GENERATING UNIT—Louisville Gas & Electric Co., 311 W. Chestnut St., imprv., enlarging electric generating unit at Paddy Run Station on Ohio River, own forces, $8,600,000. Pioneer Service & Eng. Co., 231 S. LaSalle St., Chicago, Ill., engr. CD 10/10.

▲ Mich., Wayne—PLANT—Lincoln-Mercury Div., Ford Motor Co., Benson Ford, gen. mgr., 6299 W. Warren St., Detroit, brick, steel, glass assembly plant, Michigan Ave., to Bryant & Detwiler Co., 2304 Penobscot Bldg., Detroit. Approx. $10,000,000. CD 9/5.

▲ N. J., New Brunswick—FREIGHT YARDS—The Pennsylvania R.R., L. P. Struble, ch. engr., (Eastern Region) Broad St. Station, Phila., 4, Pa., freight yards, at Adams, North Brunswick Twp., Middlesex Co., own forces. $1,356,000.

▲ N. J., Union—PLANT—Air Reduction Sales Co., 60 E. 42 St., New York, 17, N. Y., general contract, 1 story, 272,000 sq. ft. plant adjacent to main line of Lehigh Valley R.R. and close to both U.S. Rt. 22 and N.J. State Hy. 29, to J. O. Evans, 1445 N. Broad St., Hillside, Approx. $2,000,000.

▲ N. Y., New York—GARAGE, etc.—Branch Motor Express Co., 135 W. 18 St., Zone 11, garage, gasoline station and freight depot, to George Hoffman & Sons, Inc., 349 E. 149 St., Zone 51, Approx. $1,000,000. CD 7/10.

▲ N. Y., West Albany—SMOKE HOUSE—Tobin Packing Co., Albany Packing Div., Exchange St.; smoke house addn., at meat packing plant, to James E. Lowe & Sons, 243 State St., Schenectady, Approx. $1,000,000. Bids 9/18. Henschien, Everds & Crombie, 59 E. Van Buren St., Chicago, Ill., archts. CD 9/14.

▲ Pa., Danville—FERMENTATION—Merck & Co., Inc., 1935 Kerrigan Rd., Rahway, N. J., 4 fermentation units, recl. filtration and extraction bldg., warehouse and laboratory unit, sterile techniques bldg. at Cherokee plant, near here, to Austin Co., 19 Rector St., New York, N. Y., Approx. $2,000,000.

▲ Pa., Duncansville (near Altoona)—FACTORY—National Radiator Co., Johnstown, 1 story brick, block, steel frame factory, to Ragnar Benson, Inc., Investment Bldg., Pittsburgh. Approx. $1,000,000. Bids 9/22. CD 9/21.

Pa., Pittsburgh—WAREHOUSE—General Electric Supply Corp., 422 Duquesne Way, 2 story, 185x275 ft. brick, block, warehouse, to O. H. Martin Co., 18 1 St., Sharpsburg. Approx. $500,000. Bids 9/15. CD 9/12.

Pa., Pittsburgh—ROUGH STORAGE—Jones & Laughlin Steel Corp., 3 and Ross Sts., 1 story, 90x720 ft. steel frame rough storage bldg., 2 Ave., to Rust Eng. Co., 575 6 Ave., Approx. $500,000. CD 5/17/49.

▲ Tenn., Memphis—CHEMICAL PLANT—E. I. du Pont de Nemours & Co., du Pont Bldg., Wilmington, Del., sodium cyanide plant on 225 acre site, own forces. Approx. $7,500,000.

Tex., Beaumont—SHOPS, etc.—Texas Gulf Sulphur Co., 2nd Natl. Bank Bldg., Houston, maintenance and repair shops, drainage in plant area, water supply and lines to Consolidated Western Steel Corp., Orange. $525,000. CD 10/10.

▲ Tex., Beaumont—POWER PLANT, etc.—Texas Gulf Sulphur Co., 2nd Natl. Bank Bldg., Houston, addnl. units for main power plant and sys. various types pipe lines to Consolidated Western Steel Corp., Orange, $2,345,000 and $475,000 respectively. CD 10/10.

Que., Montreal—BUS TERMINAL—Provincial Transport Co. Ltd., 1188 Dorchester St., 3 story bsmnt., 96x100 ft., 38x100 ft., bus terminal, Berri St., to Foundation Co. of Canada Ltd., 1900 W. Sherbrooke St., Approx. $500,000. D. Shennan, Canada Cement Bldg., archt. CD 3/4/49.

UNCLASSIFIED

BIDS ASKED

† Colorado—TRANSMISSION LINE—B.A. 11/1—Bureau Reclamation Dpt. Interior, Fort Collins, constr. Brighton-Hoyt Brush 115-kilovolt transmission line, Colorado-Big Thompson Proj., between Brighton and Brush. Spec. 3193. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, ch. engr.

† D. C., Bellevue—BOILERS—B.A. 11/1—Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., boilers and equip. installation and addns., at Bldg. 5, Naval Research Laboratory, Spec. 24344.

† Ill., Illiopolis—FENCING—B.A. 11/1—U. S. Eng., 520 Merchandise Mart, Chicago, Zone 54, fencing certain contaminated field areas of inactive Sangamon Ordnance Plant.

B. C., Sointula—WHARF REPAIRS, etc.—B.A. 11/1—Acting Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf repairs and float renewals. Approx. $62,300. Plans deposit $10. R. Blais, c/o owner, engr.

N. S., Loch Broom—RIFLE RANGE—B.A. 11/1—J. D. McCarthy, secy., c/o Canadian Commercial Corp., 70 Lon St., Ottawa, Ont., constr. 600 yard 12-target rifle range. Approx. $75,000. Plans deposit $25.

Ont., Toronto—HARBOR IMPRVS—B.A. 11/1—Acting Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, harbor imprvs., circulating channel exten., 2 steel sheet pile gravity structures, spaced 100 ft. apart rectangular enclosures, 348 ft. 3¼-in. x 21 ft. 7½ in. Approx. $150,000. Plans deposit $25. R. Blais, c/o owner, engr.

† N. M., Las Cruces—FACILITIES—B.A. About 11/2—U. S. Eng., P. O. Box 1538, Albuquerque, transfer facilities for Production Well P-1, White Sands Proving Ground (NAV-93). Serial No. Eng 29-005-51-9.

† Arizona-Nevada—OUTDOOR TRANSFORMER, etc.—B.A. 11/2—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnish., del. f.o.b. cars shipping point or f.o.b. cars Prescott, Ariz., outdoor transformer, lightning arresters, circuit mounted on transformer tank for Prescott sub-station, Davis Dam Proj., Spec. 3195. L. N. McClellan, ch. engr.

† North Dakota—DISTRIBUTION BOARDS, etc.—B.A. 11/2—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnish, del. f.o.b. cars shipping point f.o.b. cars Washburn and Bismarck, N. D., distribution boards and battery chargers, for Washburn and Bismarck sub-stations Transmission Div., Missouri River Basin Proj., Spec. 3192. L. N. McCellan, ch. engr.

† North Dakota—SUB-STATIONS—B. A. 11/2—Bureau Reclamation, Dpt. Interior, Bismarck, construct 10,000 kva Lakota and 10,000 kva Valley City sub-stations, Missouri River Basin Proj., Transmission Div., Spec. Re-600C-50.

Texas—RURAL DISTRIBUTION LINES—B. A. 11/2—Sam Houston Electric Co-operative, Inc., Livingston, 257 mi. rural distr. lines, Polk, Co., $275,000. Plans deposit $5. CD 7/13.

† Wyoming—STRUCTURAL STEEL—B.A. 11/2—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. Bonneville, (LCL); Emory, (CL) or Shoshoni, (LTL Truck) fabricated structural steel for the Boysen switchyard and Alcova-Boysen and Boysen-Thermopolis 115-kilovolt transmission lines, Big Horn Dist., Boysen Div., Boysen Unit, Transmission Div., Missouri River Basin Proj., Spec. DS-3220. L. N. McClellan, ch. engr.

Ia., Des Moines—SWIMMING POOL—B.A. 11/6—Bd. Educ., swimming pool at Smouse Opportunity School, $100,000. CD 9/27.

Tex., Nederland—SWIMMING POOL—B.A. 11/6—Nederland Independent School Dist., Nederland, rein.-con. swimming pool. $65,000. Johnson & Kelley, Scanlan Bldg., Houston, archts.

† Arizona-California-Nevada—OIL STORAGE TANKS, etc.—B. A. 11/7—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Boulder City, Nev., oil storage tanks for Hoover Switchyard, Boulder Canyon Proj., Spec. DS-3210. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr. CD 9/12/44, under Earthwork, Waterways.

† Washington—RADIAL-GATE HOISTS, etc.—B. A. 11/7—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Othello, radial-gate hoists for concrete check, Station 134 plus 52, with lettered dimensions for Potholes East Canal, Columbia Basin Prop., Spec. DS-3211. L. N. McClellan, ch. engr.

† New Mexico—TRANSMISSION LINE—B. A. 11/8—Bureau Reclamation, Dpt. Interior, Elephant Butte, construct Socorro-Albuquerque 115 kilovolt transmission line, Rio Grande Proj., 1-phase, single-circuit, wood-pole, H-frame type, approx. 80 mi. long. Spec. No. DC-3206.

LOW BIDDERS

▲ Mass., Boston—PIER, etc.—Port of Boston Auth., Commonwealth Pier 5, South Boston, rejected bids Sept. 21, Contr. 8, constr. Pier 5 and Contr. 7 dredging, filling, demolition at site of Commonwealth Pier 1 and Boston and Albany Pier 2, East Boston, L. B. $4,521,836 and L. B. $466,700 respectively. CD 10/2, under L.B.

CONTRACTS AWARDED

Missouri—RURAL DISTRIBUTION LINES—Intercounty Electric Co-operative, Licking, 458.7 mi. rural distr. lines and 29.22 mi. conversions in Maries, Phelps, Dent, Texas, Shannon and Wright Counties, Missouri Proj. 18 R and U Texas, to A. A. Electric Co., 3125 S. 60 St., Cicero, Ill., $688,589. Bids 9/20. CD 9/14.

▲† N. Y., Scotia—STORAGE—Dpt. P. Wks., 90 Church St., New York, Zone 7, perishable oil storage, at Naval Supply Depot, NOY 19395, to Walsh Constr. Co., 122 E. 42 St., New York, Zone 17, $1,689,668. Bids 9/29. CD 9/22.

† O., Sharonville—FIRE PROTECTION FACILITIES—Pub. Bldgs. Admin., General Services Bldg., Wash., D. C., fire protection facilities, federal supply service warehouses to Baltimore Contractors, Inc., 711 S. Central Ave., Baltimore, Md., $955,000. Awarded 10/13. CD 10/9 under LB.

▲ Texas, Arkansas, Missouri and Illinois—GAS PIPE LINE—Texas, Illinois Natural Gas Pipeline Co., 20 N. Wacker Dr., Chicago 6, Ill., 72.2 mi. 12 and 24 in., 195.91 mi. 20 in. and 1.089 mi. 30 in. gas pipe line between area of Houston, Tex. (Fairfax, Tex.) to Joliet, Ill., traversing states of Texas, Arkansas, Missouri and Illinois; 101.3 mi. 26 in. line, Sect. 1 and 289.29 mi. 30 in. line Sects. 11, 12, 13 to Midwestern Constructors, Inc., 105 N. Boulder St., Tulsa, Okla.***403.55 mi. 30 in. Sects. 7, 8, 9, 10 to Bechtel Corp., 220 Bush St., San Francisco, Calif. ***94.98 mi. 26 in. line Sect. 2, 72 mi. 12 in. and 24 in. Sect. 3, 305.8 mi. 30 in. line Sects. 4, 5, and 6, to H. C. Price Co., Box 1111, Bartlesville, Okla. Est. $98,966,700.

▲ Tex., Whitney—TRACK REMOVAL—Atcheson, Topeka & Santa Fe Ry. System, J. A. Noble, ch. engr. (Western Region) Amarillo, taking up, removing and relocating railway tracks, appurtenances in vicinity Whitney Dam Proj., own forces. $2,500,000. CD 10/5.

(Proposal Advertisements see pp. 94 to 107)

OFFICIAL PROPOSALS

RATE: THE RATE FOR OFFICIAL PROPOSAL ADVERTISING IS $1.00 PER LINE (OR FRACTION) PER INSERTION.

COPY RECEIVED UP TO 3:00 P. M. FRIDAY FOR ISSUE OUT FOLLOWING THURSDAY SUBJECT TO SPACE OPEN FOR LAST MINUTE ADS

SEND COPY TO OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK 18, N. Y.

U. S. Government

Department of Commerce, Bureau of Public Roads, October 16, 1950. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., NOVEMBER 17, 1950, for Project 1H2, Baltimore-Washington Parkway, Anne Arundel County, Maryland. Reinforced Concrete Structures and Approaches. Length 0.067 mile. The approximate quantity of the more important items are as follows: 19,500 cu. yd. Excavation, 6,410 cu. yd. Cement Concrete, 915,000 lb. Reinforcing Steel, 96,000 lb. Structural Steel and 24,000 lin. ft. Untreated Timber Piling. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or CERTIFIED check made payable to the Treasurer of the United States, will be required to insure their return within 15 days after the opening of bids. Plans, specifications and proposal forms may be obtained at the address given above. H. J. Spelman, Division Engineer. (147)

OFFICIAL PROPOSALS

Bids: November 14, 1950 (137)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACT NO. 65

The work to be performed under this contract involves the constructions of pavement for two interchanges; pavement for Turnpike highway and for a crossroad; providing storm drains and appurtenant structures for drainage; excavating portions of embankment and overload and depositing the materials so excavated on the embankments; topsoiling and other incidental work in connection with the construction of the New Jersey Turnpike from the Hackensack River, Town of Secaucus, Hudson County to New Jersey Route 6, Township of Ridgefield Park, Bergen County.

Principal items of work include:

10 Inch Portland Cement Concrete Pavement with 6 Inch Special Sub-base	265,000 Sq. Yds.
or	
4½ Inch Asphaltic Concrete Pavement with 8 Inch Macadam Base and 6 Inch sub-base	275,000 Sq. Yds.
Bridge Approach Slabs	4,500 Sq. Yds.
Roadway Excavation, Earth	500,000 Cu. Yds.
Shoulders	148,000 Sq. Yds.
4 Inch Topsoiling	425,000 Sq. Yds.
Storm Drains (various sizes)	27,000 Lin. Ft.
Manholes	20 Each
Inlets	440 Each

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey until 10:30 o'clock on the morning of November 14, 1950 and thereafter in the Veterans Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 A.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plan and equipment.

Contract documents may be seen and may be inspected by prospective bidders during office hours, after October 16, 1950, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, and at the office of the Engineers, Edwards and Kelcey, Frederic R. Harris, Inc., and O. J. Porter & Company, Associated, 3 William Street, Newark, New Jersey.

Contract Documents will be furnished for Five Dollars ($5.00) for each set, upon application to the Authority. The payment will not be refunded and the Contract Documents are not required to be returned.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike, and must be enclosed in sealed, special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five (5) percent of the amount of the proposal, but not less than $500 nor more than $200,000 and must be delivered at the above place on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for proposal bond, of the form to be used for financial statement and plan and equipment statement to be submitted with proposal, and special addressed envelopes are furnished in detached form with the Contract Documents.

The Contract will be awarded or proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

October 16, 1950

Bids: November 27, 1950 (145)

Sanitary Sewerage Facilities

Sealed bids will be received by the Board of Supervisors of Fairfax County, Virginia, at the Office of the Sanitary Engineer, County of Fairfax, VEPCO Building, Fairfax, Virginia, until MONDAY, NOVEMBER 27, 1950, at 2:00 o'clock, P.M., Eastern Standard Time, for the construction of approximately 50,000 feet of 8" to 18" sanitary sewers, sewage lift station, and appurtenant facilities in Sanitary District No. 1, which has been designated as "Contract No. 6", and promptly thereafter they will be publicly opened and read in the Board of Supervisors Room, County Office Building, Fairfax, Virginia.

Plans, specifications and contract documents may be examined at the Office of Sanitary Engineer, and copies thereof may be obtained from G. Hubard Massey, Consulting Engineer, Ford Building, Fairfax, Virginia, upon payment of $25.00 in cash for each set, which amount shall not be returnable. Bids must be submitted on the forms supplied for this purpose and in strict accordance with the instructions therefor. Each bidder will be required to show evidence of possession of a certificate of registration as a contractor in the Commonwealth of Virginia before his bid will be considered.

Each bid must be accompanied by a bid bond or certified check made payable to the Treasurer of Fairfax County, Virginia, in the amount of at least five per centum (5%) of the total amount of the bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

The time for completion of the contract is 360 consecutive calendar days and liquidated damages in the amount of $75.00 per day will be assessed in event of delay or default in the completion of the contract.

No bid may be withdrawn for a period of thirty (30) days after the actual opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

James J. Corbalis, Jr.
Sanitary Engineer, County of Fairfax
Fairfax, Virginia

Bids: November 9, 1950 (146)

Grading, Paving and Fencing for Bus Parking Areas

THE PORT OF NEW YORK AUTHORITY
LINCOLN TUNNEL

CONTRACT LT-13

Sealed proposals for grading, paving and fencing for bus parking areas adjacent to the Lincoln Tunnel approach ramps to the Port Authority Bus Terminal will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., N. Y. 11, until 11:30 A.M., Thursday, November 9, 1950, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, October 26, 1950

(Continued on page 95)

Contractors Watch This Section —

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

(Continued from page 94)

Bids: November 2, 1950 (139)

Construction of Route 25

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 25, SECTION 32-E

Construction of Route 25, Section 32-E, Newark Junction, Bridge & Off-Ramp to Circle from northbound Through Roadway and Slot from northbound Local to northbound Through Roadway, City of Newark, Essex County. Length 0.749 mile.

Roadway Items

Estimated,
4,400 cu. yds. Roadway Excavation—Earth
1,960 sq. yds. 4" Macadam Base Course
1,960 sq. yds. 3" Mod. Pen. Mac. Inter. Course
70 tons Pavement, Type MA-BC
120 tons Pavemnt, Type A or T
5,900 sq. yds. 10" Rein. Conc. Pavement Surface

Electrical Work

Bridge and Highway Lighting System

Bridge Items

804 cu. yds. Concrete in Structures
99,500 lbs. Structural Steel
57,030 lbs. Rein. Steel in Structures
12,540 lin. ft. Treated Timber Piles
1,300 cu. ft. Concrete Crib Wall

Bids for the above will be received at the office of the State Highway Department, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Thursday, November 2, 1950, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. ABBOTT
State Highway Commissioner

Bids: November 2, 1950 (138)

Paving of Route 4

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 4, SECTION 44-A (PAVING)

For the paving of Route 4, Section 44-A, Cape May Court House—Relocation, Middle Township, Cape May County, Federal Projects No. F-8(3) and F-24(4). Length 4.227 miles.

Estimated:
16,500 cu. yds. Roadway Excavation—Earth
66,200 sq. yds. 8" Gravel Shoulders
30,900 sq. yds. 8" Gravel Base Course
15,900 sq. yds. 4" Mod. Pen. Mac. Inter. Course
3,400 tons 2" Pavement, Type MA-BC-1
109,220 sq. yds. 8" Rein. Conc. Pavement Surface

Bids for the above will be received at the office of the State Highway Department, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Thursday, November 2, 1950, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 23 of the Revised Statutes of New Jersey and supplements and by Section 1, Public Laws 834, 80th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 1433 Bacharach Blvd., Atlantic City, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specification and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. ABBOTT
State Highway Commissioner

Bids: November 16, 1950 (127)

Water Storage Reservoirs

Sealed proposals for furnishing all plant, labor, and materials for the construction of two (2) 115-foot inside diameter prestressed concrete water storage reservoirs, including miscellaneous piping, connections and appurtenances at Oxford Summit, Chester County, Pa., under Contract No. 20; Two (2) 205-foot inside diameter (Alternate 1) or three (3) 205-foot inside diameter (Alternate 2), or four (4) 205-foot inside diameter (Alternate 3), pre-stressed concrete water storage reservoirs, and a chlorination and meter building, including miscellaneous piping, connections and appurtenances at Village Green, Delaware County, Pa., under Contract No. 21; and new piping and alterations to existing piping, additions and alterations to existing Gate House and effluent flume, at the existing Harrison Hill Reservoir, Delaware County, Pa., under Contract No. 22; will be received by the Executive Manager of the Chester Municipal Authority at the Authority Office, 5th and Welsh Streets, Chester, Pennsylvania up to 2:00 o'clock P.M., Eastern Standard Time, on November 16, 1950, at which time the proposals will be publicly opened and read aloud.

The work will be awarded singly under each contract or under Contract No. 20 and 21 in combination, or under Contracts 20, 21 and 22 in combination, as deemed to be the best interests of the Owner. The work under Contract No. 21 will be awarded under either one of the three alternates.

Information for Bidders, Form of Bid, Specifications and Form of Contract may be examined at the Office of the Chester Municipal Authority or at the office of Albright & Friel Inc., Consulting Engineers, 121 South Broad Street, Philadelphia 7, Pennsylvania; and copies thereof may be obtained at either office on and after October 23, 1950 upon a deposit of $30.00 for each set of documents applying to all contracts. If the documents are returned in good condition within five days after the opening of bids, the full amount of the deposit will be returned to each actual bidder for one set of plans and other deposits will be refunded with a deduction of $15.00 to defray the actual cost of reproduction. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

A certified check or bid bond drawn to the order of the Chester Municipal Authority equal to five per cent (5%) of the amount of bid must be submitted with the proposal on each contract.

The proposal must be sealed and marked "Contract No. 20" or "Contract No. 21", or "Contract No. 22" or any combination as listed above, addressed to the Chester Municipal Authority, c/o Clarence L. Conner, Executive Manager.

The Board reserves the right to reject any and/or all bids.

CLARENCE L. CONNER
Executive Manager

October 9, 1950

Bids: November 16, 1950 (136)

Administration Building & Toll Collection Facilities

DELAWARE RIVER
JOINT TOLL BRIDGE COMMISSION
526 Broad Street Bank Building
Trenton 8, New Jersey

NOTICE TO CONTRACTORS

Sealed proposals for the construction of the Administration Building and Toll Collection Facilities for the Delaware River Joint Toll Bridge Commission in Morrisville, Pennsylvania will be received by the Delaware River Joint Toll Bridge Commission at its office, 526 Broad Street Bank Building, Trenton 8, New Jersey, until eleven o'clock (11:00) A.M., Eastern Standard Time, on November 16, 1950 at which time and place all bids will be publicly opened and read aloud.

After October 19, 1950 Instructions to Bidders, form of Proposal, form of Contract, form of Performance Bond, Plans and Specifications may be examined at the office of the Commission, above address, or at the office of the J. E. Greiner Company, 1201 St. Paul Street Baltimore 2, Maryland, and copies thereof obtained upon payment of $15.00 for each set, which amount is not returnable.

Each bid must be accompanied by a certified check in the amount of $20,000.00.

All checks shall be made payable to the Delaware River Joint Toll Bridge Commission, which amounts shall be forfeited as liquidated damages if the bidder or bidders fail, within ten (10) consecutive Calendar days after written notice that the bidder or bidders have been awarded the contract, to enter into a written contract with the Commission in accordance with the accepted bid, and to give a Performance Bond satisfactory to the Commission, equal to one hundred percent (100%) of the total amount of the Contract.

The Commission reserves the right to waive any informalities in the bids received; to reject any or all bids; and to award the contract only to those experienced in this class of work, and to the bidder whose proposal is deemed by the Commission to be most advantageous to the public interest.

DELAWARE RIVER JOINT
TOLL BRIDGE COMMISSION
by: Alexander R. Miller
Chairman of Commission

Date October 19, 1950

U. S. Government

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS, Foot of Prytania Street, New Orleans, La.—Sealed bids will be received in this office until 11:00 a.m., C.S.T., 28 November 1950, and then publicly opened for the purchase of 127 vertical lift gates, steel, total approximate weight 1,900 tons, for Morganza Control Structure in Pointe Coupee Parish, La. Installation will be accomplished under separate contract. Further information on application. (143)

(Continued on page 96)

OFFICIAL PROPOSALS
(Continued from page 95)

Bids: November 1, 1950 (122)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on Wednesday, November 1, 1950 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids. refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 3				
		Wm. Robinson, Dist. Engr., 301 E. Water Street, Syracuse, N. Y.				
Onondaga	FAOT50-7	Interchange to the On-	0.94 Thwy.	9" Cem. Conc. Pavt. Var.	$55,000	$931,000
	FARC50-56	tario Thruway	0.82 Int. Rds.	Width = 2.47 mi.	Plans $25	
	FAST50-12	Syracuse-Phoenix, S. H.	1.28 Access	Misc. Work = 0.54 mi.		
		Euclid Road		Hy. Sep. 2 Sp. Alpha I-		
		S. H. 5274		Beam 168.5' Hy. Sep. 4		
		Proj. No. U. I. 1071 (11)		Sp. Alpha I-Beam 215.83'		
				Alpha Royalty $491.40		
		DISTRICT No. 4				
		A. R. Mulligan, Dist. Engr., Barge Canal Terminal, Rochester, N. Y.				
Wyoming	RC50-57	Warsaw-Gainesville, S.H. 5400	0.07	Asp. Conc. Type 1A, Opt. 22" Reinf. Conc. Slab	$1,500 Plans $10	$27,000
		DISTRICT No. 5				
		C. R. Watkins, Dist. Engr., 65 Court Street, Buffalo, N. Y.				
Chautauqua	FARC50-55	Proj. U 455(8)	1.03	Asph. Conc. Type 2A,	$23,000	$390,000
	FAC 50-12	Penn. State Line-Dun-		Opt. = 0.99 mi.	Plans $10	
		kirk Pt. 3, S. H. 8344		Misc. Work = 0.04 mi.		
		Lake Shore Drive: City				
		of Dunkirk				
Erie	FAC 50-11	City of Buffalo: Fuhr-	0.71	Bridge Substructure	$100,000	$1,791,000
		mann Blvd. High Level			Plans $25	
		Bridge				
		Proj. U 250(5)				
		DISTRICT No. 9				
		F. W. Donovan, Dist. Engr., 71 Frederick Street, Binghamton, N. Y.				
Delaware	FARC 50-54	Delhi-Bloomville,	3.53	Asph. Conc. Type 1A,	$40,000	$698,000
		S. H. 747		Optional	Plans $25	
		Hobart-Stamford,		46.92' Sp. I-Beam Bridge		
		S. H. 952				
		Proj. F 746(2), F 198(2)				
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Montauk Hwy. at Little East Neck Road, Babylon, L. I., N. Y.				
Queens	FAVWE50-5	Van Wyck Expressway	2.97	Roadside Improvement	$30,000	$513,000
		Cont. 8			Plans $15	
		Proj. U 1085(11)				

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: November 9, 1950 (135)

Construction of Bridge Approach

DELAWARE RIVER
JOINT TOLL BRIDGE COMMISSION
526 Broad Street Bank Building
Trenton 8, New Jersey

NOTICE TO CONTRACTORS

Sealed proposals for the construction of the Trenton Approach to the Delaware River Bridge from Morrisville, Pennsylvania to Trenton, New Jersey will be received by the Delaware River Joint Toll Bridge Commission at its office, 526 Broad Street Bank Building, Trenton 8, New Jersey until eleven o'clock (11:00) A.M., Eastern Standard Time, on November 9, 1950 at which time and place all bids will be publicly opened and read aloud.

After October 12, 1950 Instruction to Bidders, form of Proposal, form of Contract, form of Performance Bond, Plans and Specifications may be examined at the office of the Commission, above address or at the office of the J. E. Greiner Company, 1201 St. Paul Street, Baltimore 2, Maryland, and copies thereof obtained upon payment of $15.00 for each set, which amount is not returnable.

The following are approximate quantities of major items:

Roadway Excavation	61,000 C. Y.
Borrow Excavation	41,000 C. Y.
Structure Excavation	13,000 C. Y.
Laying 36" Sewer	900 L. F.
Class A Concrete	7,000 C. Y.
Reinforcing Steel Bars	745,000 Lbs.
Structural Steel	1,111,000 Lbs.
Spiral Shear Connectors	11,000 Lbs.
Reinforced Concrete Pavement	17,000 S. Y.

Each bid must be accompanied by a certified check in the amount of $75,000.00.

All checks shall be made payable to the Delaware River Joint Toll Bridge Commission, which amounts shall be forfeited as liquidated damages if the bidder or bidders fail, within ten (10) consecutive calendar days after written notice that the bidder or bidders have been awarded the contract, to enter into a written contract with the Commission in accordance with the accepted bid, and to give a Performance Bond satisfactory to the Commission, equal to one hundred percent (100%) of total amount of the Contract.

The Commission reserves the right to waive any informalities in the bids received, to reject any or all bids, and to award the contract only to those experienced in this class of work, and to the bidder whose proposal is deemed by the Commission to be most advantageous to the public interest.

DELAWARE RIVER JOINT
TOLL BRIDGE COMMISSION
by: Alexander R. Miller
Chairman of Commission

Date October 12, 1950

(Continued on page 97)

SEARCHLIGHT SECTION

This index is published as a convenience to the readers. Every care is taken to make it accurate, but Searchlight Section assumes no responsibility for errors or omissions.

Aberthaw Co. 100, 105
Air Compressor Rental Co. 99
Albert Pipe Supply Co. 100
American Air Compressor Corp. 105

Bendix Machinery Co., Inc. 105
Bernstein Bros. Pipe & Machy. Co. 105
Bixby, R. W. 97
Boyce Co. 99
Boyer, R. H. 103
Brunson Instrument Co., Inc. 104
Buff 104

Carlyle Rubber Co. 100
Carpenter, Inc., R. F. 102
Construction Equipment & Supply Co., Inc. 106
Construction Survey Coop. 99
Contractors Machinery Co. 105
Crane Service, Inc. 99

Darien Corp. 106
Davidson Pipe Co., Inc. 106
Drachman Steel Corp., Hy 100
DuPont de Nemours & Co., E. I. 98
Dyer Co., Inc., W. H. 107

Eastern Engineering Co. 106
Ehrbar, Edward 102
Equipment Corp. of America 103
Erthal & Grand 106

Fehrs Tractor & Equipment Co. 100
Finn Co., N. A. 99
Forsythe Equipment Co. 102
Foster Co., L. B. 106, 107
Frank, M. K. 107

Greenpoint Iron & Pipe Co., Inc. 106
Greensburg Machine Co. 105
Griffin & Sons, Inc., L. I. 102
Gurley, W. & L. E. 104

Haynes Equipment Co., Inc. 100
Hickerson, Roy D. 104
Hodge & Hammond, Inc. 100, 103, 105
Hyman-Michaels Co. 107

Ingersoll Co., Chas. M. 99, 105
Intercounty Construction Corp. 106

Kaiser Engineers—Div. of Kaiser Industries, Inc. 98
Kaplus, Inc., David B. 104
Kiewit Sons' Co., Peter 102
Klein-Hyman 106
Koch Erecting Co., Karl 102

Lewis, Harry C. 105
Liss Equipment 103
Liquidators Sales Co. 104

McCoy, G. T. 97
McGlone Construction Co., Perry 100
Mississippi Valley Equipment Co. 105, 106
Morrison Railway Supply Corp. 107

Nance & Vivadelli Co. 99
National Blue Print Co. 104
Nesbitt Equipment Co. 100
Nichols Construction Co. 104

O'Neill, A. J. 103
Ort, Karl 100

Robers Co., Fred J. 102

Sacramento Calif. State Personnel Board 98
Schoonmaker Co., Inc., A. G. 105
Smith, G. T.—Welding Shipyard Div. 99
Smith, Inc., L. B. 100, 101, 105
Southwest Steel Corp. 100
Stone the Crane Man 99
Stone Equipment Co., The 100
Susquehanna Paving Materials Co. 99

Tagco 106
Tarblyn System 99
Texas Construction Co. 100
Tractor & Equipment Co. 100

Vulcan Iron Works 105

Walsh Co., Richard P. 103
Warren-Knight Co. 104
Weil & Co., J. H. 104
Weiss Co., B. M. 103
Wellworth Trading Co. 106
Williams Construction Co. 105
Wilson Engineering Corp. 99

OFFICIAL PROPOSALS
(Continued from page 96)

Bids: December 15, 1950 (141)

Yonge Street Subway

TENDERS
CONTRACT
S-5A

Sealed tenders, endorsed "Tenders for Yonge Street Subway, Contract S-5A", will be received by the Toronto Transportation Commission at its office, 35 Yonge Street, Toronto, until 12.00 Noon, Eastern Standard Time, on Friday, December 15th, 1950.

The work for which such tenders are invited consists of building the Subway from the Muir Memorial Tunnel Portal to the north side of Imperial Street on the west side of Yonge Street of "Open-Cut Construction", including the Davisville Yard, together with buildings and miscellaneous work pertinent and collateral thereto, as specified and shown in the Contract Documents.

All tenders must be made upon blank forms of tender as furnished by the Toronto Transportation Commission and included in the Contract Documents, and shall be made in accordance with the provisions contained in said documents.

The successful tenderer will be required to furnish, execute and deliver to the Commission a performance bond satisfactory to the Commission in the amount and within the time set out in the Contract Documents.

The Contract Documents, including plans and specifications, are on file and will be available to tenderers at the office of the Toronto Transportation Commission, Rapid Transit Department, 14 Front Street East, Toronto, on and after the 18th October, 1950. Copies of the Contract Documents may be obtained by depositing One Hundred Dollars ($100.00) with the Commission for each set of documents. The amount of the deposit will be refunded upon return of the plans and documents in good condition within ten (10) calendar days after the opening of tenders.

Each tender must be accompanied by cash or a certified cheque on a chartered bank doing business in the City of Toronto, in the amount of Sixty-Five Thousand Dollars ($65,000.00) payable to the order of the Toronto Transportation Commission.

The Toronto Transportation Commission reserves the right to reject any or all tenders and to disregard any informalities in the tenders or tendering.

No tender may be withdrawn, after the scheduled closing time for receipt of tenders for at least forty-five (45) calendar days.

Wm. C. McBrien, Chairman,
TORONTO TRANSPORTATION
COMMISSION

Bids: January 9, 1950 (140)

New Zealand Tunnel Contact: Wairarapa Railway Deviation

Tenders are being invited from firms in the United States and other countries for a contract involving the construction of approximately 5 miles 37.33 chains of single-track concrete-lined railway tunnels, together with approximately 1 mile 75 chains of approach formation. This project is known as the Rimutaka Tunnel Contract, for the Wellington-Wairarapa Railway Deviation in New Zealand.

Fencing, ballasting and platelaying of the permanent track, together with excavation of cuttings and construction of culverts outside the tunnel are not included in this contract.

Plans and specifications are available from the New Zealand Government Trade Commissioner, Dupont Circle Building, 1146 Connecticut Avenue, Washington 6, D. C. Tenders close with the Ministry of Works in Wellington on 9th January, 1951, and may be submitted through the New Zealand Trade Commissioner in Washington.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3219) will be received by Bureau of Reclamation, Coachella, California, November 21, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, pipe lines, and structures, laterals 88.6, 91.4, and 92.0, and sublaterals, Part 1 of Unit 9, Coachella Valley Distribution System, All-American Canal System, Boulder Canyon Project, Arizona-California-Nevada. The work is situated in the vicinity of Mecca, California. Principal items are approximately: excavation, 95,000 cu. yds.; concrete in structures, 500 cu. yds.; furnishing and laying 33 miles of concrete pipe lines; and other work. Time allowed for completion will be 180 days. For particulars, address Bureau of Reclamation, Coachella, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (142)

NORTH PLATTE PROJECT, WYOMING-NEBRASKA Design Section Casper, Wyoming, October 5, 1950

UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION—NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. R7-154 will be received at P. O. Box 280, Reclamation Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, October 31, 1950, and then publicly opened for furnishing labor and materials and performing all work for the repair of Lingle Wasteway near Lingle, Wyoming, North Platte Project, Wyoming-Nebraska.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, 318 New Customhouse, Denver 2, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. The specifications will consist of 2 volumes, "Special Provisions" and "Standard Specifications for Construction of Canal Systems, March 1949". No charge will be made for copies of the Standard Specifications or for copies of the Special Provisions furnished for bidding purposes; for others the charge will be $0.30 per copy for the Standard Specifications and $0.25 per copy for the Special Provisions, not returnable. (144)

EMPLOYMENT

Wanted

TOP NOTCH SPECIFICATION WRITER

For large Civil Engineering Office on Gulf Coast

Specializing in Heavy Construction.

Permanent Work—Excellent Pay.

Please reply to

P-8033, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED, SEVERAL engineering graduates under 35, by large industrial fire prevention organization for field work involving periodic inspections and special consulting service. Electrical and Chemical engineers preferred. Permanent. Openings in United States and Canada. P-7287, Engineering News-Record.

STRUCTURAL DESIGNER—Draftsman: Three to Five years experience on buildings and industrial structures; small upstate New York office; large program. P-7927, Engineering News-Record.

WANTED: BRIDGE Designer, structural draftsman; experienced checker; highway engineer experienced in traffic interchange design. Give complete details including salary desired. P-7980, Engineering News-Record.

SUPERINTENDENT FOR Sand and Gravel Plant in the middle west. State age, education, experience, references and salary expected. P-8029, Engineering News-Record.

(Continued on page 98)

ENGINEERS

Major oil company operating in the Middle East requires graduate engineers in numerous classifications, including:

CIVIL
ASST. CIVIL
MECHANICAL
ASST. MECHANICAL
ELECTRICAL
COMMUNICATIONS
FIELD CONSTRUCTION

Positions cover various fields of specialization in the above classifications. Vacancies are for both experienced and inexperienced men. If interested write giving complete outline of experience, education and personal history.

P-7941, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

WANTED

GRADUATE CIVIL ENGINEERS WITH OR WITHOUT EXPERIENCE FOR HIGHWAY AND BRIDGE LOCATION, DESIGN AND CONSTRUCTION

Starting Salary $310 per Month
Opportunity for Permanent
Civil Service Positions
Give age, experience and education

G. T. McCOY,
State Highway Engineer
Division of Highways
P. O. Box 1499
Sacramento, California

Graduate ENGINEERS

GOOD OPPORTUNITIES

for

SENIOR CONSTRUCTION ENGINEERS—ten to fifteen years experience in heavy Chemical Industrial Construction required. Must be graduate.

HEATING & VENTILATING DESIGNERS—must be graduate with at least 5 years industrial heating and ventilating design experience or at least 12 years practical industrial design experience in this field.

HEATING & VENTILATING ENGINEERS—must be experienced graduate engineers capable of handling field and office problems in heating, ventilating and air conditioning design including economical evaluation of methods.

PROCESS ARRANGEMENT & PIPING DESIGNERS—must be graduate with at least 5 years experience in industrial design and chemical plant design or at least 12 years practical industrial design experience in this field.

PROCESS ENGINEERS—must be graduate with minimum of 8 years industrial plant design experience at least 3 years of which have been in responsible charge of design work. Field experience desirable. Must have experience in design calculations, equipment design and plant arrangement in the chemical field.

Give experience, education, age, references, personal history, salary received and salary expected. Please be complete and specific.

All inquiries will be considered promptly and kept confidential.

E. I. du Pont de Nemours & Co.
(Inc.)
Engineering Department Personnel
WILMINGTON 98, DELAWARE

SEARCHLIGHT SECTION

Classified Advertising

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** EQUIPMENT USED OR RESALE

UNDISPLAYED RATE
(Not available for equipment advertising)

$1.20 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line.

INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.

Replies are forwarded each day as received at each of the offices mentioned without additional charge.

Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

DISPLAYED RATE

The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.

An advertising inch is measured ⅞ inch vertically on one col.; 3 col.—30 inches to a page. E.N.R.

New advertisements received by October 27th will appear in the Nov 9th issue

ELECTRICAL ENGINEERS

Graduates, experienced in design engineering and economic studies of steam-electric power plants and high voltage substations. Also, knowledge of power system relaying and preparation of specifications for switchboards and switchgear.

P-7541, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

Engineers Wanted

Civil—Electrical—Mechanical—Structural

***Apply* KAISER ENGINEERS**
Division of Kaiser Industries, Inc.
1924 Broadway Oakland, California

ENGINEER

with experience in Development and Design of Centrifugal Pumps for manufacturing plant in New England. State qualifications and references.

P-7858, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

POSITIONS VACANT

(Continued from page 97)

ENGINEERS WANTED, experienced in preparation of plans and specifications for water works, sewers, water treatment and sewage treatment plants. State experience, salary requirements and give references. Apply to P-8005, Engineering News-Record.

CHEMICAL ENGINEER for Cement Plant in middle west. State age, education, experience, references and salary expected. P-8030, Engineering News-Record.

WANTED: EXPERIENCED Structural Designers in steel or reinforced concrete. Also, concrete detailers. Seelye, Stevenson & Value, 101 Park Avenue, New York, N. Y.

MECHANICAL ENGINEER for Cement plant in middle west. State age, education, experience, references and salary expected. P-8031, Engineering News-Record.

POSITIONS WANTED

MASTER MECHANIC, service manager or shop foreman, age 41, eighteen years experience as supervisor of repair, maintenance and operation of heavy equipment, best of references as to ability and character, location immaterial. PW-7910, Engineering News-Record.

ENGINEER—25 years experience. Presently chief engineer of large firm engaged in industrial engineering and construction. Available anywhere in United States on reasonable notice. PW-7979, Engineering News-Record.

BUILDING CONSTRUCTION Engineer — 20 years experience. Thoroughly understands estimating, pricing, subletting and office work. Desires position of responsibility. PW-7889, Engineering News-Record.

(Continued on page 99)

ENGINEERS - DESIGNERS DRAFTSMEN

We are engaged on highway, bridge, foundation and general structural engineering work, and during the next few weeks anticipate expanding our organization in Pittsburgh and Philadelphia. Give brief record of training and experience in first application with salary required, age and when available.

P-8006, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

SUPERINTENDENT

Wanted in California

Must be thoroughly capable of assuming direction of all field work of a well established contracting firm specializing in industrial construction. Must be most conscious, with a background of several years building for industry under highly competitive conditions; active, resourceful, a proven leader. Will look on this as a golden opportunity to make the most of his capabilities, with the possibility of an eventual interest in the firm. This while working and living in the country's finest climate and fastest growing industrial center. Replies held in confidence.

P-7967, Engineering News-Record
1111 Wilshire Blvd., Los Angeles 17, Calif.

WANTED STRUCTURAL DESIGNER

Overseas assignment with American oil company in South America. Must have degree and over five years' experience structural design. Will be required to design, draft, and check structures of steel, reinforced concrete, or timber, including trestles, pipe supports, wharves, towers and refinery units. Will make field investigations and recommendations for necessary repairs. Will be expected to train lower-rated employees. This is a regular staff job having retirement plans and other benefits.

Write giving age, education, marital status, and detailed experience resume.

Box 308-D Radio City Station
New York 19, New York

STRUCTURAL ENGINEERS

California offers long term professional employment to men with more than 5 years structural engineering including 2 years in charge of structural design of class "A" buildings.

Salary up to $584.

Write today. Recruitment Section, Dept. SE-1,

STATE PERSONNEL BOARD
1015 L Street Sacramento, California

ADDITIONAL POSITIONS VACANT ADS

on page 97

A COURSE OF INSTRUCTION BY MAIL IN

STRUCTURAL ENGINEERING

Fortieth Year

OUR COURSES HAVE HELPED THOUSANDS
to better positions and to pass State Board Examinations

- Complete Structural Engineering Course.
- Public Works Structures.
- Architectural Engineering.
- Special Course C (State Board Exams).
- Reinforced Concrete Engineering.
- Structural Steel Designing.

Monthly payments permissible. Information sent without obligation. WRITE TODAY

WILSON ENGINEERING CORPORATION

College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

TD9 International Bulldozer 1946 9 ft. Isacson angle Blade 20 inch cats. **$2300.00**

Byers 83 Shovel 1947 ¾ yd. with shovel front attachment. **$6500.00**

T35 Bulldozer and extra parts **$1000.00**

35 ft. Crane boom tag line and Owens bucket. **$1000.00**

Jaeger 2 inch centrifugal pump with hoses **$150.00**

Dial Pittsfield 2-8509 or write
to P. O. Box 965.
PITTSFIELD, MASS.

POSITIONS WANTED
(Continued from page 99)

CONTRACTOR'S ASSISTANT to take charge of estimating, bidding, purchasing, and subcontracts. Twenty years experience as job engineers, superintendent, estimator and designer for heavy construction. Prefer Great Lakes or Middle Atlantic area. PW-7992, Engineering News-Record.

GENERAL FOREMAN or Shop Super. in Str. Steel Lab. plant held position 12 years, have 25 years exp. in this business. PW-8021, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT. 15 years experience all types public construction; estimating; pricing and sub-letting. Capable of managing complete project. Available to travel. PW-8024, Engineering News-Record.

ESTIMATOR - HIGHLY skilled all types construction, all trades. Desires free-lance work. Quantity take-offs and pricing. Will call for plans. N. Y. vicinity. LAurelton 5-3393.

PART TIME WORK WANTED

COMPLETE BOOKKEEPING. Accounting, payroll, tax service. Write-ups, audits, special assignments. New York Metropolitan area. PTWW-8045, Engineering News-Record.

SELLING OPPORTUNITY WANTED

MANUFACTURER'S REPRESENTATIVE wishes distributorship state of Colorado, building specialty or building products. H.S. in C.E. Seven years engineering. Eight years sales-representative. Correspondence invited. Best references. Write to E. G. W. 1611 West Cheyenne Road, Colorado Springs, Colorado.

PATENT ATTORNEY

Patent Practice

before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommel; Registered Patent Attorneys, Suite 454, 815-15th Street, N. W., Washington 5, D. C.

Patented Prefabricated Building System for Houses and Utility

6 Labourers Build 2 Houses a week without Mechanics. The Dutch Owner Seeks Contact With U. S. Contract Builders or Financiers, Who Can Make a Good Job Out of This.

Letters Post Box 262—Eindhoven—Holland

ESTIMATING SERVICE

Any Trade and Type of Project
Literature and Sample on request

Construction Survey Cooperative
101 Park Ave., New York 17, N. Y.
MUrray Hill 5-7317 Founded 1922

SUBMERGED PIPE LINE CONSTRUCTION

BOYCE COMPANY

Phone 3-2530 Clearwater, Fla.

FOR SALE—SHEETING

400 16 ft. pieces of Armco black steel flange type sheeting with pulling holes and 4 driving heads in new condition. Price—$3500.

NANCE & VIVADELLI CO.
2420 WILSON BLVD. ARLINGTON, VA.

LEARN TO ESTIMATE

Today, more than ever before, you must know how to analyze building costs. If you want to become a successful builder, learn how to prepare a correct estimate in a hurry. Get in on the profitable work now available wherever you turn. Your success is assured if your estimates are right; otherwise you are licked before you start.

The Tamblyn System of Estimating will make a real estimator out of you in a few weeks of your spare time. We are so sure that you will want to learn it, that we will send you our complete home study course for ten days examination absolutely free. If you don't think it is the finest thing you ever saw, just return it and it won't cost you a cent. If you like it and want it, send us $8.75 when 10 days are up and $10.00 per month until $48.75 is paid.

This estimating system is based on forty years of actual construction experience. It has been sold all over the world for more than twenty years. Thousands of estimators and contractors swear by it. Our offer isn't hot air and big talk. We don't give you a diploma or a lapel button, but we do teach you down to earth estimating which will bring you profitable business.

Just send your name and address today, and we will mail you the complete course at once for your approval.

TAMBLYN SYSTEM

11-15 So. Pearl St., E-462
Denver, Colo.

EXCESS EQUIPMENT FOR SALE

Roscoe asphalt distributor—800 gallon capacity
Littleford 5 ton Trail-O-Roller
Austin-Western Model 99-M diesel grader
Littleford Tankcar heater
Galion 10 ton 3 wheel gas roller
Huber 10 ton 3 wheel gas roller
Littleford power rotary broom
Hobart portable arcwelder 300 amps
Gledhill black top drag

All above equipment in excellent condition.

SUSQUEHANNA PAVING MATERIALS CO.
137 S. Second St. Sunbury, Pa.

SALE OR RENT
EXCELLENT CONDITION

2—Caterpillar D8 Dozers
1—Caterpillar D7 Dozer
1—Bucyrus Erie Shovel 2½ C.Y. Rock Front

N. A. FINN COMPANY
369 Lexington Ave. New York 17, N. Y.
LExington 2-3868

FOR SALE
Used Scaffolding and Staging Planks

Over 200,000 board feet of 2" x 10" x 2" x 12", RL. up to 18' long, fir and spruce. Phone or write G. T. Smith, Weld ng Shipyards, Box 1860, Norfolk 1, Virginia, phone 48442.

WANTED

WE BUY OR SELL
All Types of
TRENCHING MACHINES
AIR COMPRESSOR RENTAL CO.
19615 NOTTINGHAM RD. CLEVELAND
Kenmore 1-8000

WANTED

A 3500 A or B Manitowoc Speed Crane not over 8 years old. State price and where it can be inspected.

CRANE SERVICE, INC.
1020 S. 41st Street, Milwaukee, Wisconsin

WANTED

30-40 Ton Capy Loco Cranes, Steam and Diesel
30-50 Ton Capy Whirleys, Steam and Diesel
Manitowoc 1½ Yd Shovel Front
1½ Yd Crane, Diesel, Vacuum control
Bucyrus Erie, 30-B Steam Crane or equal
Bins, Cement and Material
Backhoe for Buckeye Model 70
5 Yard Bucyrus-Erie Shovel and Dragline

STONE THE CRANE MAN
1132 Prudential Bldg., Buffalo, N. Y.

WANTED
Cutting Edges—Grader Blades
Any Quantities
Write - Wire - or Phone
W-7996, Engineering News-Record
220 West 42nd Street, New York 18, N. Y.
Phone Rector 2-3794

WANTED
CATERPILLARS D2, D4, D7
SCRAPERS Model 60, 70 and 80
HYSTER D2, D4, D6, D7, D8

CHAS. M. INGERSOLL CO.
19930 Detroit Rd. Rocky River, Ohio
Edition 1-1010

CARLYLE
INDUSTRIAL RUBBER PRODUCTS FOR EVERY PURPOSE

IMMEDIATE DELIVERY OF CONVEYOR, ELEVATOR AND TRANSMISSION BELTING — PIPE, WATER, SUCTION, AIR, STEAM AND WELDING HOSE

SUCTION HOSE
Stock No. CO-443-E

Heavy-duty, smooth bore, wire inserted Suction Hose. Flexible and strong. For use in mines, sewers, trenches, etc. with diaphragm pumps, pressure pumps and other contractors equipment. Prices shown include I.P.T. Couplings attached to each length.

I. D. Size and Length	Price Per Length	I. D. Size and Length	Price Per Length
1¼"x10 ft.	$ 5.00	3"x15 ft.	$36.50
1¼"x15 ft.	7.50	3"x20 ft.	47.50
1¼"x20 ft.	10.00	4"x10 ft.	25.00
1½"x10 ft.	6.50	4"x20 ft.	68.00
1½"x15 ft.	9.00	5"x15 ft.	53.00
1½"x20 ft.	14.00	5"x20 ft.	90.00
2"x10 ft.	12.00	6"x10 ft.	90.00
2"x15 ft.	22.75	6"x15 ft.	126.00
2"x20 ft.	30.25	6"x20 ft.	161.00
2½"x10 ft.	15.00	*I.P.T. Nipples or Couplings attached to hose.	

DISCHARGE HOSE
Stock No. CO-442-E

Cotton jacket, rubber lined hose suitable for water supply and discharge service. Constructed exactly like Fire Department hose. Light in weight. For pressures to 200 lbs. Attached to each length are Iron Pipe Thread Couplings.

Inside Diameter	Price per 25 Ft. Length	Price per 35 Ft. Length	Price per 50 Ft. Length
1½"	$6.75	$15.75	$21.75
2"	15.00	20.30	28.25
2½"	17.50	23.00	35.00
3"	25.75	34.25	47.50
4"	30.00	40.00	50.00

HIGH PRESSURE HOSE
Stock No. CO-448-E

2½" x 8 PLY DUCK AND CORD CONSTRUCTION SUITABLE FOR 400 LBS. WORKING PRESSURE.
For that difficult job where high pressures are encountered Carlyle offers this rugged flexible hose saving you over 50% in cost and giving dependable service for the following jobs—

* Jetting—Water, Air, Cement
* Hydraulic Grout
* Steam to 100 lbs. Pressure
* Oil Discharge

Low Priced at $1.00 ft.
Available in 10-15-25-30-50 ft. Lengths.
High Pressure Couplings attached as follows:

		Per Set
Male and Male	2½" I.P.T.	$10.00
Female & Male	2½" I.P.T.	12.00
Female & Female	2½" I.P.T.	16.00

COMPRESSOR AIR HOSE
Stock No. CO-441-E

250 Lbs. Working Pressure. Heavy-duty extremely flexible. Pneumatic Air Hose. For all Air Tools, Compressors, Chippers, Riveters, Drills and Breakers. Each length complete with Universal Air Hose Couplings attached. These Couplings are quick snap and interchangeable with Air King, Chicago, Cleveland and others.

I.D. Size and Length	Price Per Length
½"x25 ft.	$ 7.75
½"x50 ft.	14.00
¾"x25 ft.	9.25
¾"x50 ft.	17.00
1"x25 ft.	11.00
1"x50 ft.	20.50

√—over stocked. Drastically reduced prices to move.
Terms:—f.o.b.—N. Y. City—2%—10 days.

CARLYLE RUBBER CO., Inc.
62-66 Park Place, New York 7, N. Y.
Phone: Digby 9-3810

• STRUCTURAL STEEL SHAPES •
New and Used—Immediate Delivery

At present our inventory of steel shapes and forms includes a full line of both new and used steel especially for heavy construction work. 4" I beam to 36" Girder Beam. 14" Columns 287#/398#

BEARING PILE SECTION

Stock list on request. Write, wire or phone.

HY DRACHMAN STEEL CORPORATION

Warehouse
14-23 34th Ave., Astoria L. I., N. Y.
Astoria 8-8023; 8-4484-5

Sales Office
563 E. Tremont Ave., New York City, N. Y.
Cypress 9-5440-1

WIRE MESH

150 Rolls No. 6 Gauge 6 x 6 x 6 x 6—5 ft. x 150 ft.
Price—$4.50 per 100 sq. ft.

REINFORCING RODS

1071 pieces ½" x 30'
593 pieces ½" x 40'
614 pieces ⅝" x 30'
170 pieces ⅝" x 40'
567 pieces ¾" x 30'
153 pieces ¾" x 40'
Mild Steel

Price—$7.50 cwt.

All prices FOB, K. C., Mo.
Immediate delivery

SOUTHWEST STEEL Corp.
3401 Truman Rd. Kansas City, Mo.

HEATERS

Overhauled, Tested and Guaranteed Stewart Warner Portable Ground Heaters, with new production coils, diaphragms, etc., installed. Type D-1, 100,000 BTU's, $174.50 each. Overhauled, but no new parts, $149.50 each. Spare parts, burners or heat exchangers, superchargers, spark plugs, coils, etc., for Southwind Heaters. Write for prices. New, perfect Stewart-Warner Heaters, Part #782N, producing 80,000 BTU's, for P.B.Y. Planes, $150.00 each. No Ducts. Overhauled Herman Nelson, Type F-1, Heaters, producing 250,000 BTU's, $348.50 each. Satisfaction guaranteed. Send for descriptive literature.

KARL ORT
DEPARTMENT R. YORK, PENNA.

DEPENDABLE USED MACHINES
Special.—Badger ditcher on full crawlers, digs 24" wide, 7½' deep

Bay City ¾ yd. dragline
Osgood 200 crane
Wayne wagon crane
RD-7 with bulldozer
C H & E 6" pump
New Morris 10" gravel pump
Hughes-Keenan Roustabout crane
P&H 255A comb. dragline and shovel
Badger 36x20 roll crusher
Int. TD-4 with front end loader
Butler Carscoop
Iowa 9x36 crusher
3x8, 3-deck screen
Waukesha 6MZR engine
Koehler light plant

For rent,—cranes, draglines, backhoes and all accessories.

10002 Southwest Highway TRACTOR & EQUIPMENT CO. Oak Lawn, Ill.

Scoopmobiles & Buggymobiles
NEW & USED
For Sale or Rent

HODGE & HAMMOND, INC.
1100 E. 156th Street, New York 59, N. Y.

FOR SALE
Reliance Crushing Plant
15" x 30" Crusher—38' Bucket Elevator
58" x 12' Roller Screen—100 Ton Capacity Bin
2 Gaso. Engine Power Units

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.

41-B Buc. Erie Steam Crane 50' boom, 60" bullet
Kuehring Model 605 crane, drag line, wide crawlers, Diesel
N-West Model 6 gas drag or hoe wide crawlers
Murphy Diesel
Browning Model K-2 crane, gasoline, good buy
2,000 C. F. low pressure IR air comp. electric
2 drum Thomas electric hoist 50 HP electric
Mixermobile 2 yard with 40 foot tower
Bay City Truck Crane 1200 capacity, 25 ton

The STONE EQUIPMENT Co.
10038 W. Jefferson Ave., River Rouge, Michigan

NEW JACKS
60 ton Watson-Stillman Hydraulic
60% off list price
Also Chicago Pneumatic and Ingersoll-Rand
Equipment for below list prices.

HAYNES EQUIPMENT CO., INC.
144 Fulton St. New Milford, N. J.
Write for descriptive catalog.

Euclid Model BV LOADER
Cummins HBID Diesel
Rebuilt Condition
$16,000

L. B. SMITH, INC.
Camp Hill, Pa.

FOR SALE
Lima—1201 Dragline, 90 Foot Boom. Used 8 months

FOR RENT
Northwest—Model 6 Combination
Northwest—Model 95
Both machines like new

PERRY McGLONE CONSTRUCTION CO.
608 Grand Ave. Bank Bldg., Kansas City, Mo.

FOR SALE
1450 Lin. Ft. New & Slightly Used Steel Concrete Bridge Forms. 3 ft, 4 ft, 6 ft, 7½ ft and 10 ft Diameters. 2 ft, 3 ft, 4 ft, 6 ft and 10 ft. lengths.

TEXAS CONSTRUCTION COMPANY
Box 1509 Beaumont, Texas

PUMPCRETE For Sale
160 Double—1200 Ft. Pipe—Large Stock Fittings & Spare Parts

NESBITT EQUIPMENT COMPANY
451 Calvert St. Alexandria, Virginia

(1) Model BV-3 Euclid Loader.
(2) D-8 Caterpillar Tractors with Caterpillar Control Units, 2-U Series.
(2) Allis-Chalmers HD-19 Tractors with Control Units and Push Plates.
(1) Model "W" LeTourneau Scraper.
(2) Gar Wood 6-yard 2-wheel Scrapers-New.
(19) Model 33FDT Euclid Bottom Dump Units.
(1) Rex Dual Drum Paver.

FEHRS TRACTOR & EQUIPMENT CO.
1809-11 Cuming St. Omaha 2, Neb.

L.B.SMITH INC. OFFERS

AIR COMPRESSORS

Gardner-Denver 500 cubic foot two-stage water-cooled, D13000 Caterpillar diesel on four pneumatics. Used one month.

Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.

Gardner-Denver air-cooled 105 cubic foot with air receiver, V-belt drive from power take-off and mounted on 1942 Ford chassis with Wood two-yard dump body.

LeRoi 2-stage 105 cubic foot air-cooled, skid mounted, built-in tool boxes, hose reels and hose.

Worthington 210 cubic foot, two-stage, air-cooled, on steel wheels with Hercules diesel.

Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.

Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.

QUARRY EQUIPMENT & BINS

Cedarapids BBB 1038 Scalper.

10 x 20 Beaumont jaw crusher.

10 x 7 Allis Chalmers Blake type jaw crusher.

Cedarapids No. 1 Kubit.

60 ton 2 compartment storage bin with clam shell gates.

New 16 x 16 double clamshell gates.

20" x 6'6" Belt Type Magnetic Separator.

Conveyors—18"—24"—30"—36".

2—4' x 12' Tyler F600 screens.

Cedarapids portable screening plant.

TRUCKS—TRAILERS

1½-ton Ford & Chevrolet.

2½-ton GMC. New and rebuilt.

Sterling COE Model 255SGCS tandem drive tractor 9.00x24 tires, 200 HP Cummins supercharged diesel, complete with 40-ton Rogers low bed equipment trailer, 16—7.50x20 tires, airbrakes, outriggers, excellent condition.

2,000 gallon tanks on semi-trailer mounting.

New and rebuilt dump bodies.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

GASOLINE AND DIESEL ENGINES

New JXD Hercules Gasoline.

Buda, Hercules, Hill diesels, rebuilt.

New and rebuilt Murphy diesels.

GM 6 and 12 cylinder diesels, practically new.

SHOVELS—CRANES

Lorain 75B, 1¼ yd. shovel, diesel power.

Lorain 55B gas powered crane.

P&H Model 625A 15-ton crawler crane.

Marion 25-ton diesel powered heavy duty truck crane on heavily reinforced Mack.

Brownhoist 1-yd. gas shovel and crane.

Lorain 30 combination ½ yd. shovel, hoe & clam.

P&H Model 150 ½ yd. truck crane on 6x4 Mack.

Lorain 82 diesel dragline, 60' boom.

SHOVEL & CRANE ATTACHMENTS

Lorain 75B-77 1½-yd shovel attachment rebuilt.

P&H 203 shovel attachment.

Chain crowd Lorain 30A shovel attachment.

Lorain 40 Hi-Lift shovel attachment.

Bucyrus-Erie 30B tunnel front attachment.

Koehring 301 dragline fairlead.

50' crane-clam boom, 1¼ or 1½-yd.

Lorain 75 fairlead.

Backhoe Buckets & Attachments

¾-yd Lorain, 40, LBS #6105, 44" cutting width, teeth, sheave.

28" outside width solid bottom type LBS #4377, good condition.

¾-yd Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

NEW TAGLINES

McCaffrey Model 848 for 1¼ to 2-yd crane.

McCaffrey Model 636 for ¾-yd to 1-yd crane.

SHOVEL DIPPERS

Lorain 41, ¾-yd. LBS #7433, rebuilt.

New Lima 1-yd. Amsco. LBS #2295.

Bucyrus-Erie 1¼-yd gas air, LBS #3782, fair.

Lorain 75 manganese 1¼-yd, LBS #7233, teeth and bail.

Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS #2260.

Pettibone-Mulliken 2-yd Lorain 82 or 920, manganese, LBS #5361.

Pettibone-Mulliken 2-yd for 3500 Manitowac LBS #3763.

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Concrete Finishers

Jaeger type "L" double screed, 10½'-12½', rebuilt.

Heltzel 10'-12' finisher, rebuilt.

Blaw-Knox gas-electric 10½'-12½', rebuilt.

2 Koehring 10'-12', rebuilt.

Concrete Road Forms

830'—Truscon 7"x8" forms, with stakes.

1380'—Heltzel 7"x8" forms, with stakes.

1220'—Heltzel 9"x8" forms with stakes.

1430'—Heltzel 10"x8" forms with stakes.

1010'—Blaw-Knox 10"x8" forms, with stakes.

Fine Grade Machines

Flynn surgrader 10'-12', rebuilt.

R.B. Fine Grader for 21' width, rebuilt.

Form Graders—2 of each

Cleveland formgrader, new condition.

Carr formgrader, new 1944, rebuilt.

Barber-Greene 44C Trenching Machine 18" to 24" cutting width, 7' depth.

ROLLERS

Hercules 9-11 ton, three-wheel.

GRADERS

New Warco D76 tandem driven grader, 12' blade, V-type scarifier, 13.00x24 tires all around, 24,300 lbs., International UD14A diesel engine.

Austin Western 77 tandem rears, scarifier, 12' blade, gas power.

TRACTORS

FD Cletrac crawler tractor, Buckeye bull-dozer & double drum power control unit, DHXB Hercules diesel engine. Rebuilt, immediate delivery.

Minn-Moline UTI wheel type, gas powered with Lull front end shovel loader.

Phone HARRISBURG, PA. 7-3431

LASTING • BONAFIDE • SERVICE — L.B. SMITH, INC.

L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

GOOD EQUIPMENT

REX 5½ yd. Adjusta-Hite Moto-Mixer powered by Waukesha gas engine, water tank. Mfg. in 1949. New Guarantee.

FORDSON Wheel Tractor with D. A. West hydraulic loader with tip bucket. New in 1947. In good condition.

BUCYRUS-ERIE Dozer-Shovel mounted on International TD-9 Crawler Tractor, gravity dump, no blade. New in 1947. In good condition.

LORAIN Model MC-4 Moto Crane, 30' boom, super structure, Waukesha MZR carrier, SRKR gasoline engine. Mfg. in 1941.

REX 4 yard Horizontal Moto-Mixer powered by 6 cyl. Waukesha gasoline engine with electric starter and water tank. Mfg. in 1938. In operating condition.

HOUGH Model HLD Payloader with gravity dump bucket. New in 1946. In good condition.

JAEGER Model 10-P Self-Priming Centrifugal Pump, 10" suction, 65 HP Hercules 6 cyl. engine, 4 steel wheels. New in 1949. In good condition.

ALLIS-CHALMERS Model HD-19 Diesel Crawler Tractor with Gar Wood cable bulldozer and Le Tourneau power control unit, enclosed cab. Cleaned and painted. Mfg. in 1948. In very good condition.

ALLIS-CHALMERS—Model HD-19 Diesel Crawler Tractor, with Le Tourneau power control unit. Enclosed cab. Cleaned and painted. New in 1948. In very good condition.

ALLIS-CHALMERS—Model HD-7 Tractor, 63" tread, 18" shoes, hydraulically operated Gar Wood bulldozer, starter, canopy top, cleaned and painted. Mfg. in 1947. In good condition.

CATERPILLAR Model D6 Crawler Tractor, 62" tread, 18" shoes, 6 cyl. engine, no starter, front end pump, with La Plant-Choate hydraulic angle blade, pins and bushings, 18 new pads, cleaned and painted. Mfg. in 1941. In good condition.

CATERPILLAR Model D7 Crawler Tractor 20" shoes, with Le Tourneau cable bulldozer. No starter. Cleaned and painted. Mfg. in 1942. In good condition.

CATERPILLAR Model D8 Diesel Crawler Tractor 22" shoes, with La Plant-Choate power control unit, cable bulldozer, canopy, cleaned and painted. Mfg. in 1940. In excellent condition.

INTERNATIONAL HARVESTER Model TD-14, with 18" shoes, B-E hydraulic bulldozer, rear power-take-off, hoodside doors, electric starter, engine has new block, sprocket, 1 front idler, top and bottom rollers, front idler guides, pins and bushings, cleaned and painted. Mfg. in 1939. In excellent condition.

INTERNATIONAL HARVESTER Model TD-18, 62" treads, 18" shoes, with B-E bulldozer, new main clutch, TD 18A engine, cleaned and painted. Mfg. in 1948. In very good condition.

INTERNATIONAL HARVESTER Model TD-24, Diesel Crawler-Tractors with B-E cable blade and B-E P29 power control unit. Mfg. 1949-1950. New guarantee.

LE TOURNEAU Super C Motor Scrapers, Cummins 6 cyl. Diesel Engine, 21.00 x 24, 20 ply front tires 12 cu. yd. Struck capacity. Mfg. in 1942. In very good condition.

Write, wire or phone

EHRBAR

Brooklyn, N.Y.—Evergreen 3-5000
Union, N. J.—Unionville 2-7400
Westbury, L. I.—Westbury 7-1990

Contractors Surplus Equipment for Sale

1—Bucyrus-Erie two cubic yard Shovel Model 51B with Kohler Light Plant 1948 Model
3—LeTourneau LP Scrapers
1—Caterpillar D-6 Tractor with LaPlant Choate Hydraulic Angle Dozer
1—Caterpillar D-7 Tractor with Caterpillar Bulldozer
1—Caterpillar D-8 Tractor with Double-Drum Power Control Unit
2—Caterpillar D-8 Tractors with Bulldozers and Double-Drum Power Control Units
2—Ingersoll-Rand 315 Diesel Compressors
1—Westinghouse Generator
1—Kohler Generator—Model A-21
1—Seaman's Pulvy Mixer Model MHD-72-55
1—Brothers 16 wheel rubber tired Roller
1—Hercules 7-ton three wheel Roller
1—Buckeye Spreader
1—One-ton Dual Wheel 1946 Dodge Pick-up
1—Three-quarter Ton 1949 Dodge Pick-up
1—Ditson Chain Saw 11 HP Motor
2—Ingersoll-Rand Hammers JB5
1—3" Gorman Rupp Centrifugal Water Pump
1—3" Sterling Centrifugal Water Pump
1—4" Sterling Centrifugal Water Pump
1—4" Carter Centrifugal Water Pump
1—4" Marlow Single Acting Diaphragm Water Pump
1—4" Carter Double Acting Diaphragm Water Pump
1—6" Carter Centrifugal Water Pump
1—35HP Steam Boiler completely re-built
1—750 Gal. Trailer mounted water tank
1—Bucyrus-Erie Rock Grapple
1—1200 gallon two compartment water or fuel tank in perfect condition

R. F. CARPENTER, INC.
ALBURG, VERMONT

For Rent

Stiff leg derricks from 5 to 25 ton capacity.

Guy derricks from 5 to 75 ton capacity.

Hoists, double and triple drum with swingers from 4,000 to 12,000 line pull.

Truck Cranes with boom lengths to 110 foot.

2000B Manitowoc Crawler with boom lengths to 120 foot.

Compressors from 105 to 210 cu. ft.

KARL KOCH ERECTING CO., INC.
362 Casanova St. Bronx 59, N. Y.

FOR SALE

ATLAS SPEED FORMS

STEEL FORMS FOR CONCRETE WALLS & FLOORS

APPROXIMATELY
12,000 SQ. FEET
OVER 50% NEW
Mostly
8 In. Width x 8 Feet Long
COMPLETE WITH
CORNER SECTIONS

PRICED FOR QUICK SALE

Write
MORRISON-KNUDSEN CO. Inc.
AND
PETER KIEWIT SONS CO.
COULEE DAM
WASHINGTON

For Rent

SPEEDCRANES

LATE MODELS

Manitowoc Diesel Powered Speedcranes for rent. 25, 40 and 60 ton capacities with booms 100' or more, 20' and 30' jibs. Special price on long rentals.

FORSYTHE EQUIPMENT CO., INC.
37-11 Vernon Blvd. Long Island City, New York
Tel. STillwell 4-1030

FOR RENT

Motor Truck Cranes 20 ton capacity
2—Bay City — 1—Lorain
100 foot boom — 15 foot jib
Semi Trucks — Winch trucks
Derrick trucks — Low Boy trailers
Air Compressors — Portable Welders

L. I. Griffin & Sons, Inc.
5002 South Hanna St.
Fort Wayne, Indiana
Phone H-3295

FOR RENT

50-B Bucyrus Erie Steam Crane,

85 foot boom and leads—oil burner. Excellent Condition. *Immediately available.*

FR-8044, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

FOR RENT

One Northwest Model 95 CRANE and DRAGLINE

New—Never used

Available at once—with or without operator
Ferd J. Robers Co. Box 350 Burlington, Wis.

TRACTORS

2 Cat. D8 2U Ser. FACTORY NEW with angl. dzr.
Cat. D8 Ser. 3R rebuilt. #2S D.D.P.C.U. Cat. 8S bulldozer blade both new 1950.
Cat. D8 LeTour. D.D.P.C.U. bulldozer blade rebuilt-guar.
Cat. D7 Tractor, angledozer D.D.P.C.U. Rebuilt.
Cat. D4 with T4 Traxcavator.
Cat. D4 with 1T4 Traxca ator and blade.
A-C HD-19 Garwood cable bulldozer D.D.P.C.U.
Int. TD-18 B-E hyd. bulldozer.
Int. TD-24 with B-E cable blade and P-29 PCU.

GRADERS—CONCRETE MIXERS

2 Yd 56-S Smith Mod T. Tilting Mixer.
2 Yd C.M.C. 56-S Building Mixer.
2 Yd Ransome 56-S Builders Mixer, Elec.
28-S Ransome Builders Mixers, Elec.
Adams 511 heavy duty Diesel powered.
Rome 404 tandem drive Diesel powered. 1948.
Gallon 101 Diesel. Rebuilt.
Austin-Western Model 99-M Auto Patrol Diesel.
Koehring Model 34-E Twin Batch Paver.
Ransome 34-E Dual Drum Paver, Diesel Power.

CONCRETE PLANTS AND STORAGE BINS

Butler complete concrete plant 500 bbls cement large aggregate bin. 5 yd. batcher etc.
Johnson 4 Compt. agg. 2 cement, 4 yd. batcher, 888 bbls. cement silo semi-auto controls, etc.
Butler cement bin 105 bbls. Complete.
Butler 300 Ton, 3 compt. bins, 1 for 400 bbls. cement, 2 compts. for aggregate.

ASPHALT PLANTS

Masden 3000# cap. Complete.
Barber-Greene 830-840 Hot Mix.
Barber-Greene Model 848 "Travel Plant".
Barber Greene 842 Portable Utility Plant. Complete

TRANSIT MIXERS

Rex 5½ yd Adjusta-Hite. New 1949.
Smith Mobile 2S Model 405, rebuilt-guar.
Rex 4 yd TM on Mack 6 BX chassis.
Jaeger 4 yd on Int. HB-12 chassis. Rebuilt.
Rex 5½ yd new 1947, on L.F. Mack.
3 Rex 3½ yd hor. Unmounted.
3 Euclid Model 49-FD rear dump
6 Euclid Model 27FD Rear Dump
4 Cat. DW10 Tractors Athey PD10 trailers.
5 Athey FB-1 two EB-2 way dump wagons.

PUMPCRETES

REX 150-180-190-200 with fittings.

SHOVELS—CRANES—DRAGLINES

Northwest 6, 1¼ yd Shovel-Crane, Diesel powered
Lorain 80, new 1948, 1¾ yd Diesel shovel.
Lima 1201, new 1947, Diesel shovel.
Lima 1201, Dragline, Diesel, 100 ft. boom.
Marion 111, high lift Diesel shovel, new 1948.
Link-Belt K 570 Shovel-Dragline. Diesel. Late type.
P&H 1055, Crane, 100 ft. bm. Buda Diesel engine.
Marion 362 1¼ yd Dragline, Diesel.
Northwest Model 25, ¾ yd Diesel shovel, new 1947.
Bay City 25, ½ yd Shovel-Backhoe.
Lorain MC 414 Truckcrane 20 tons cap. hinged type boom.
Lima 34, Dragline, 1 yd, Cummins Diesel.
Byers 83 Shovel, backhoe, ½ yd new 1947.

TRENCHERS

Parsons Model 310.
Barber-Greene Model 44C.
Parsons Model 200 wheel type approx. 2 yrs. old.
Cleveland Trencher Model 95.

STIFF LEG AND GUY DERRICKS

Steel 35 ton stiff leg derrick 100 ft. bm.
American 20 ton stiff leg 90 ft. bm.
American 15 ton stiff leg 65' boom.
Stiff leg derrick 15 tons 100 ft. boom.
American 20 ton Guy derrick 100 ft. boom.
Lambert Guy derrick 20 ton, 110 ft. boom.
Railroad 50 ton derrick car. Bridge construction.

RICHARD P. WALSH CO.
30 Church St. New York 7, N. Y.
Cable RICHWALSH COrtlandt 7-0723-4

Keep your concrete buggies busy between concrete deliveries with one of our NEW LOW-CHARGE Floor Hoppers. WRITE - WIRE - PHONE for additional information.

CRAWLER CRANES, DRAGLINES AND SHOVELS

1—2¼ yd. Mdl. K570 Link Belt Diesel Crawler Crane #2215, with 50-65-70 or 85' booms and 17'6" lib. high gantry, hydraulic controls, D17000 engine. Will handle 47½ ton. Weight 148,000#.
1—1⅝ yd. Link Belt Model K370, Ser. No. 2247, equipped with 70' boom, powered by Cat. D13000 Diesel engine.
1—1⅜ yd. Lorain Model 80, No. 10750, with 65' boom, powered by Waukesha Hesselman diesel engine.
1—1½ yd. P&H Model 655 A, dragline and crane, Ser. 6426, powered by Caterpillar Model, D13000 Diesel engine, Crane boom 75'.
1—1¼ yd. Link Belt Model K360, Ser. No. 1959, powered by Caterpillar D13000 Diesel engine with 65' boom. Also have back hoe attachment, boom 25' scoop arm 8'9", pull shovel mast 11'9", with 1⅛ yd. dipper.
1—1¼ yd. Bucyrus-Erie, Mdl. 33B, Ser. #16502, gas powered with 50' boom.
1—1¼ yd. #5 Northwest Ser. No. 4564, Powered with 6 cyl. Wisc. Model D84 gasoline engine. With 60' boom.
1—1¼ yd. Link Belt Model K38 crawler crane, Ser. No. 1520. Powered with 4 cyl. Model WL-51-H Waukesha gasoline engine with 50' boom.
1—1 yd. Erie Gas Air Model GA-2 combination shovel and crane, Ser. No. 10679, powered with 4 cyl. Waukesha Model WL55 gasoline engine, with 47' crane boom. Shovel boom 22', sticks 17' with 1 yd. dipper.
1—⅝ yd. Koehring Model 301, Ser. No. 84. Powered by 4 cyl. Wisconsin Model M gasoline engine with 40' boom.
1—¾ yd. Bucyrus Erie Mdl. 10B, Ser. #14164, gas powered with 28' boom, ⅝ yd. dragline bucket.

WE OWN IS CRANES NOT SHOWN ON THIS LIST. SEVERAL CRANES LISTED ARE IN OUR RENTAL DEPT. ONLY.

TRENCHERS

Buckeye Model 12, Serial # 12-12, powered by 6 cyl. Buda gas engine, Model HP 328, wheel type. Will cut 24" wide, 5½' deep, all mounted on crawlers.

Parson Model 200 trencher, Serial # 1774, powered by 6 cyl. Waukesha gas engine, Serial # 6HZ1U7486H, wheel type. Will cut 21" wide, 5½' deep, all mounted on crawlers.

BOTH LATE MODEL MACHINES REBUILT

AIR COMPRESSORS

Portable and stationary, electric diesel & gasoline power, sizes from 2 cu. ft., 1,000 cu. ft.

BOILERS

A large stock of boilers, ranging from 10 to 100 H.P., vertical & locomotive type, high pressure.

CAR PULLERS

2—Stephen Adamson car pullers, size 999A & 141H. Both 10 H.P. 1—10,000# L.P. 1—5,000 # L.P.

LOCOMOTIVE

1—15 ton Vulcan std. ga. locomotive Ser. No. 3903. With special McB couplings. Powered by 6 cyl. LeRoi Mdl. JMS gasoline engine. Equipped with 4 wheel air operated brakes with 2 cyl. Westinghouse air compressor. Complete with starter and generator.

PUMPCRETE

1—Rex Mdl. 190 single #CP144, gas powered with remixing hopper. Cap. 23 to 30 cu. yds. per hr. Max. lift 110'.

Partial List only—Send for Stock List—We Buy, Sell and Rent

CLIFTON HEIGHTS, PA.
MA dison 6-2200

30-J Church St.
NEW YORK 7, N. Y.
Phone Worth 2-0036

1155 So. Washtenaw Ave.
CHICAGO 12, ILL.
Phone NE vada 8-2400

P.O. Box 913-J
PITTSBURGH 30, PA.
Phone Federal 1-2000

EQUIPMENT CORPORATION of AMERICA

SALE OR RENT

1—3000 cu. ft. I-R Type PRE compressor 500 HP. 3/60/2200. Syn. Motor.
1—6 Ton Huber 3W Diesel Roller.
1—10 Ton B-S Gas Tandem Roller.
1—401 Koehring Gas Dragline.
1—801 Koehring Diesel Shovel & Dragline.
1—820 Lorain Diesel Shovel or Dragline.
1—#12 Cat. Grader.
1—45' Crane Boom for Link Belt LS90.
1—5 Ton Wright 3 motor AC Floor Operated. Underhung Travelling Crane. 21'4" Span.
1—40 Ton Orton Diesel Loco. Crane.
1—30 Ton Browning Steam Loco. Crane. 1941.

B. M. WEISS CO.
Girard Trust Co. Bldg. Phila. 2, Pa.
Rittenhouse 6-2317

FOR SALE OR TRADE FOR TRACTORS

ALL THIS EQUIPMENT READY TO WORK

Rex and Ransome pavers, size 27E, Model F.R.H. $2300.00 each or $4000.00 for both.
½ yd. Universal truck crane on Auto. Car Truck $4200.00
¾ yd P. & H. crane 300A Serial #3862, drag bucket 3900.00
1 yd. North West dragline, Twin City Gas engine, drag bucket 2900.00
125 H.P. Worthington Diesel 8-5 engine, complete, 505 RPM 1900.00
60 K.W., generator, 3 ph., 671 GM, rebuilt with instruments 4200.00
30 K.W. Caterpillar generator 3200.00
37.5 K.V.A. Buda generator 2600.00
15 K.W. gas driven generators (16), 110 V. D.C. each 375.00
All this equipment can be inspected in our yard.

LISS EQUIPMENT
2233 N.W., First Court Miami, Fla.

FOR SALE

LOCOMOTIVES

2—Whitcomb Gas 24" Ga.
Plymouth 30 ton Diesel Mechanical—1945.
1—Brookville — 8 ton Gas — Std. Ga — New 1943.
Brookville—10 Ton Diesel—30"GA—Used 900 Hrs.

G. E. 44 ton Diesel Elec. Heavy Duty— Late Model.

COMPRESSORS

CHI—PNEU. PM-4 Two-Stage—445 C.F.M. 75 H.P. 3/60-220-440. New 1947. #43017.
Worthington 2 stage, 659 C.F.M. 3/60/440—Late Model.
C-P 500 Diesel. Portable.
C-P 500 Diesel. Portable.

CRANES

Industrial 15 ton Gas. Loco. Crane.
American R-25 Steam Gantry.
Wiley 25 ton Steam Shifter.
Browning 30 T Steam Loco. Crane, #3085.

MISCELLANEOUS

HYSTAWAY ATTACHMENT FOR CAT D-8. ALMOST NEW

Dewalt GE 7½ HP saw #51098. Almost New.
18—Western 20 yd.—Air Dump.
Union #6 Sheeting Hammer, #2128.
Lambert 10½ x 12—3 Drum Steam Hoist.
American 100 ton Stiff Leg. 110' Boom.

R. H. BOYER
2005-13 W. Bellevue St., Phila. 40, Pa.
Phone Sagamore 2-7132

PUMPS AT SACRIFICE

Factory new Barnes Centrifugal Pumps
Sizes 3" to 6"
Immediate Delivery

HODGE & HAMMOND INC
1162 Grinnell Place New York 59, N. Y.

CARS: 16-20 yd. and 30 yd. air dump, 8 yd. hand dump, standard gauge.
CRUSHERS, gyratory: Various makes, sizes 12 x 44" up to 42 x 134".
CRUSHERS, jaw: Various makes, 4" x 5" to 48" x 80".
CRUSHER SPECIALS:
1—Allis Chalmers Superior 30" and 1—7½ K. Gyratory.
1—Allis Chalmers 36" x 48" and 1—Farrel 24" x 36" Jaw.
CRUSHERS, REDUCTION: Symons 2 ft. 3 ft. and 4 ft. Telsmith 2 ft., 3 ft. and 4 ft. Gyrasphere.
DRYERS & KILNS: 5 ft. x 40 ft. up to 10 ft. x 90 ft., single and double shell.
PULVERIZERS:
7" x 9' Ball Mill with 250 H.P. motor.
Marcy 7' x 18' Rod Mill with 200 H.P. motor.
Hardinge Mill 5' x 22" with 30 H.P. motor.
DRAG SCRAPER: Sauerman 60 H.P., 3 drum, 1200 ft. inhaul, 1900 ft. outhaul, with two 1½ yd. Crescent buckets.
MINE HOISTS: Single and double drum, 150 H.P. up to 2500 H.P.
TRUCKS:
6—Euclid 14TD and dump, 22 ton capacity.
6—Euclid 43FDT, bottom dump, 20 ton capacity.
20—Bottom dump haulers, 25 yd. capacity, model 92W and 100, offered without tractors. New condition.
DERRICK: Terry 15 ton steel erector's Derrick, 100 ft. mast, 90 ft. boom, with 60 H.P. motor, or 90 H.P. gasoline unit.
WELL DRILLS: 1—29T gasoline and 1—electric, with 9" bits and tools.

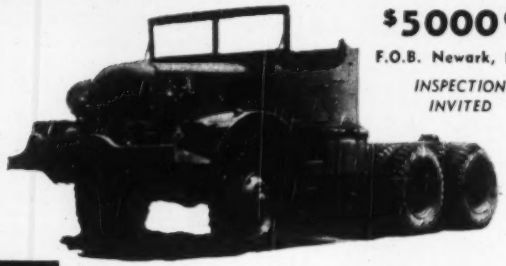
A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: Madison 3-8300—3-8301

MACK MODEL N.O. 6X6 TRUCKS

Immediate delivery—Army Surplus. Very Low Mileage

Specifications

—Mack EY Engine (707 cu. in.)
—Duplex Transmission with transfer case.
—Heavy duty double drive MACK rear ends.
—25,000 lb. Gar Wood winch.
—1200 x 24 tires.
—Air Brakes.
—Suitable for heavy duty mountings. Shovels, cranes, mixers, dump bodies. Mining and lumber.



$5000.00 each
F.O.B. Newark, N. J.
INSPECTION INVITED

DAVID B. KAPLUS, INC.
U. S. Highway No. 1 at Haynes Ave. Newark 5, N. J. Bigelow 2-4770

JACKS

NEW
RATCHET LEVER
15-TON JOYCE
No. 1928-A

$22.50 SINGLY EACH

One-man ratchet lever jack of great power. 60" steel handle, automatic lowering and double lever socket. Height closed 28" with 19" rise. Weight 94 to 98 lbs.

$18.00 — LOTS of SIX

List Price About $72.00

HAND WINCH

NEW

$37.50 EACH

A $75.00 VALUE

Two-Speed, Hand-Operated Winch. Complete with hand brake. 2-Ton Capacity; tested for 3 Ton.

CABLE SLINGS

SINGLE CABLE SLINGS
30 Ft. Long. Socket spacing 3" o 1½". ½" Wire Cable. New —in original packages.

$12.00 EACH

DOUBLE CABLE SLINGS
25 Ft. Long. Double rope steel cable. ½" diameter cable. New —in original packages. 2 Hooks. Regular Retail Price $75.00

$18.00 EACH

TERMS: Net 10 days to rated concerns. Others please send check with order. All items F. O. B. Cincinnati

LIQUIDATOR'S SALES CO.
1610 READING ROAD
CINCINNATI 2, OHIO

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

FROM STOCK
Brand New & Rebuilt
TRANSITS & LEVELS

Fully equipped modern shop—all makes and models repaired — all work guaranteed — instruments rented

Midwest Representative: W. & L. E. Gurley

NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

REPAIRS
All Makes
TRANSITS • LEVELS
Repaired, Rebuilt, Rented, Bought, Sold.

All Work Guaranteed
Precision Circular Graduating
BRUNSON INSTRUMENT CO., Inc.
1405 Walnut St., Kansas City 6, Mo.
Manufacturers of survey instruments with the famous patented Brunson Ball Bearing Base.

LASTING BRUNSON ACCURACY

GURLEY

SURVEYING INSTRUMENTS
NEW • REBUILT

Replace your platinum wire or spider web reticle with the new Gurley glass reticle. Metallic filaments deposited on Gurley glass reticles are sharply defined—equally visible against either very bright or dark backgrounds.

Patterns to suit every surveying need.

W. & L. E. GURLEY
Union Plaza Troy, N. Y.

TRANSITS and LEVELS

Immediate delivery on expertly rebuilt, well-known makes. All makes of instruments repaired. Work guaranteed.

Write for used instrument list today

J. H. WEIL & CO.
1325 CHERRY ST. PHILADELPHIA, PA.
GURLEY REPRESENTATIVES

FOR SALE

2—27 FD-Euclid End Dumps
S N6962 7028

1—±12-Caterpillar Motor Grader 7T1439

1—Reo Model 31 Tractor
W. Talbert 35 Ton Trailer

NICHOLS CONSTRUCTION CO.
BROOKVILLE, PA.
Telephone 914 & 952

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade. A complete line of Engineering Instruments and Equipment for field or office. Write for catalog N.R. 10.

WARREN-KNIGHT CO.
Manufacturers of Sterling Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

ALL MAKES

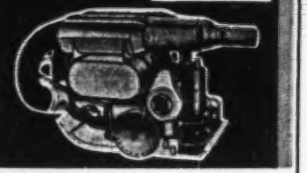
RE-BUILT REPAIR RENT REAL EXPERTS

BUFF

69 Day St., New York

SPECIALIZED REBUILDING
of surveying and engineering instruments
All makes and models expertly repaired in modern shop. All work guaranteed.
USED REBUILT INSTRUMENTS
for sale or rent
ROY D. HICKERSON
46 JOHNSON AVE. INDIANAPOLIS 19, IND.

HEAT PORTABLE HEATER SALE!



100,000 BTU PORTABLE
HEATER and DRYER

Stewart Warner portable, powerful 100,000 BTU gasoline-burning Heaters, with Turbine type blowers; 1¼ hp air-cooled, ball-bearing engine; 3 ducts (45-ft. total). IMMEDIATE DELIVERY

SALE PRICE $195.00

Excellent Operating Condition **Guaranteed**

HEATING Buildings, shops, sheds, barns, warehouses, tunnels, bldgs. under construction, spot-heating, etc.

DRYING Plaster, paint, grains, mortar, concrete. Torrid blasts of heat.

PRE-HEATING Engines, tractors, trucks, equipment, etc.

THAWING Frozen areas, machinery, pipelines, tanks, etc.

- VAST QUANTITY OF REPLACEMENT PARTS
- Also SERVICE MANUAL & PARTS CATALOG

PHONE COLLECT—your Heater can be shipped within 2 hours.

BERNSTEIN BROS.

Phone 8404 • "Since 1890" • PUEBLO, COLO.

DIESEL POWER

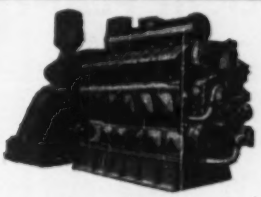
FOR

IMMEDIATE SHIPMENT

UNIT CAPACITIES—10 TO 1875 KVA

A.C.—50 AND 60 CYCLES

VARIOUS VOLTAGE



A PARTIAL LISTING OF OUR INVENTORY

KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	33F16	2000	300	375	Enterprise	DSG-6	450	450
1420	Fairbanks Morse	36D8¼	1600	720	330	Superior	RNA	396	514
1250	General Motors	16-278A	1600	720	312	General Motors	8-268A	450	1200
937.5	General Motors	12-567	1080	720	312	Clark	MD-4	375	327
625	Alco	6-12¼x13T	750	600	125	General Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6043C	90	1200
400	Buckeye	80	480	600	62.5	Int'l Harvester	UD-18	76	1200

D.C. UNITS ALSO AVAILABLE

A. G. SCHOONMAKER COMPANY, INC.

DIESEL DIVISION, 50 CHURCH ST., NEW YORK 7, N. Y.

L. B. SMITH, INC.

Parts—Rentals—Service

USED SHOVELS & CRANES

1—1948 Lorain ½ Yd. Crane
1—1948 Link Belt ½ Yd. Shovel
1—33B Bucyrus-Erie 1¼ Yd. Shovel

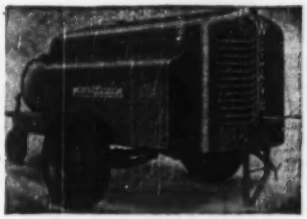
357 W. Fayette St. Phone 5-2196
Syracuse, N. Y.

PORTABLE COMPRESSORS

Sales—Rental
Rental Purchase

30 CFM WORTHINGTON (Gas) 2 Pneu
60 CFM INGERSOLL (Gas) 2 Pneu
60 CFM CHICAGO (Gas) Skids—2 Pneu
85 CFM INGERSOLL (Gas) 2 Pneu
105 CFM WORTHINGTON (Gas & Diesel)
105 CFM INGERSOLL (Gas) 2 & 4 Pneu
160 CFM WORTHINGTON (Diesel) 4 Pneu
210 CFM GARDNER DENVER (Gas) 4 Pneu
210 CFM WORTHINGTON (Gas & Diesel) 4 Pneu
315 CFM LeROI (Gas) 4 Pneu
315 CFM INGERSOLL (Diesel) 4 Pneu
315 CFM WORTHINGTON (Gas & Diesel) 4 Pneu
500 CFM WORTHINGTON (Diesel) 4 Pneu

STATIONARY COMPRESSORS
FOR RENT
ELECTRIC - STEAM - GAS



American Air Compressor Corp.

Dell Ave. & 48th St., North Bergen, N. J.

SINCE 1902

FOR SALE

80 D NORTHWEST COMBINATION CRANE & SHOVEL DRAGLINE.
4500 MANITOWOC DRAGLINE WITH NEW WAUKESHA ENGINE.

CHAS. M. INGERSOLL CO.
19930 Detroit Rd. Rocky River, Ohio

Pile Driving Equipment

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Pile Driving Accessories
Drop Pile Hammers and Caps
Steel Sheet Piling

CONTRACTORS MACHINERY Co.

2637 Southwest Blvd. Kansas City 8, Mo.
Phone Valentine 4740

FOR SALE OR RENT

1—N. W. SHOVEL

¾ c.y. Model 25
Optional as Crane or Backhoe

WILLIAMS CONSTRUCTION CO.
Box 145 Middle River Baltimore 20, Md.
Phone: Essex 1310

FOR SALE

Koehring Finisher 18' to 26'

ABERTHAW COMPANY
133 Southampton St.
Boston 18, Mass.
Phone Highlands 5-6700

FOR SALE OR RENT (also with option)

CAT. D-2 hydr. bulldozer compl. rebuilt, w. new tracks
INT. TD-18 hydr. & cable bulldozers, rebuilt
CAT. D-4 hydr. LPC dozer, new tracks, rebuilt
LIMA Paymaster Diesel Backhoe & Crane, 1949
UNIT 1020 Diesel ⅜ cy Backhoe, 1949 model
INSLEY 5½ cy Truck Crane, rebuilt; special $3,950

BENDIX MACHINERY CO., INC.
401 Broadway, New York 13 — Tel: Canal 6-5693

FOR SALE *CHEAP*

1—25-ton Davenport diesel Loco. std. gauge, 1947.
1—50-ton Porter Loco. 0-6-0 Std. gauge, 1942.
1—Schramm Diesel 315 cu. ft. 2 stage comp. 1947.
1—LeRoi 315 cu. ft. 2 stage comp. 1942.
1—6" 2—4" 1—2" Humdinger self priming pumps on steel wheels.

HARRY C. LEWIS
899 East Grand Street Elizabeth, N. J.

NEW and REBUILT
STORAGE BATTERY
LOCOMOTIVES
1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Penna.

FOR SALE

2—Lorain Model L820 cranes—draglines new 1948. Caterpillar D-13000 engine. 100 ft. boom. Crane rating 32 tons. 2 yard shovel attachment available. Excellent condition.

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. St. Louis 1, Mo.

VULCAN
PILE HAMMERS AND EXTRACTORS
NEW OR FACTORY REBUILT
FOR SALE • • • FOR RENT
327 N. BELL AVE. CHICAGO, ILL.

SHOVELS & CRANES

1—Northwest Model 6 Crane
2—Northwest Model 25—crawler crane, shovel, Pullshovel
1—Koehring 1¼ yd. Crane
1—Lorain 2 yd. diesel shovel

HODGE & HAMMOND, INC.
1162 Grinnell Place New York 59, N. Y.

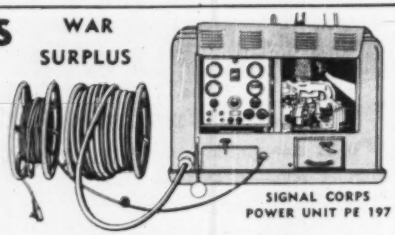
LIGHT PLANTS
Brand New!

115 volt 60 cycle A.C. single phase 5 K.W. Hobart, water cooled, 14 h.p. 4 cylinder Hercules Engine. **Remote Control**, complete panel board with instruments. 150 ft. automatic remote control cable with reel; 150 feet #6 heavy duty wire with reel; housed in metal case with replacement parts and tools. Cable with reels alone worth $400. Regular price of unit $1900.00. Shipping wt. 1250 lbs. Our price, complete **$895.00** f.o.b. Chicago

Also 2½ K. W. power plant **$295.00**

WRITE FOR ILLUSTRATED FOLDER

WAR SURPLUS



SIGNAL CORPS POWER UNIT PE 197

WELLWORTH TRADING CO.
1831 S. State St. DEPT. ENR 13 Chicago 16, Ill.

FOR SALE

2—**Fairbanks-Morse** electric pumps vertical type, centrifugal, 10 H.P. electric motors, 3 phase 60 cycles ..... Price $125.00 ea.

1—**Parsons Model 250** trenchliner trenching machine. Purchased new Sept. 1948. Waukesha gas engine. Excellent condition. Price $13000.00

1—**Ingersoll-Rand**, Wagon Jack Drill Mounted on pneumatic tires, DA-30 drifter. Purchased new 8-30-49 ..... Price $1100.00

1—**40' Crane Boom** for Model 4 Northwest. Price $800.00

INTERCOUNTY CONSTRUCTION CORPORATION
P. O. Box 329
4720 Baltimore Ave. Hyattsville, Md.

FOR SALE OR RENT
2 SUPER C TOURNAPULS
12-15 YD. CAP.
MODEL M LE TOURNEAU SCRAPER
5-8 YD. CAP.
MC 4 LORAIN MOTO CRANE
15 TON CAP. 70' BOOM 15' HB
CONSTRUCTION EQUIPMENT & SUPPLY CO., INC.
39 Lackawanna Plaza Bloomfield, N. J.
Bloomfield 2-7444

FOR SALE

HD7W Tractor—Baker Dozer, 1948	$4000.
DG Cletrac Angledozer-Garwood Log Winch	2750.
Pile Driver & 25' Boom for Osgood 200	750.
GMC Amphibian Truck-Duck	1350.
1¼ yd. R. C. Page Dragline Bucket	350.
Wilson 300 Amp. Transformer Welders	150.

HYMAN KLEIN • Monticello, N. Y.

PIPE

PILING

Need STEEL SHEET PILING?

RENT IT! . . . "FASTER from FOSTER"

LARGEST STOCKS IN U. S.
All Lengths • All Sections
Also Corrugated Steel Sheet Piling

Foster's rental rates give you a low fixed expense for competitive bidding purposes.

Pile Hammers & Extractors For Rental
Rails•Track Accessories•Wire Rope•Pipe

L.B. FOSTER CO.
PITTSBURGH 30, PA. CHICAGO 4, ILL.
HOUSTON 2, TEX. NEW YORK 7, N.Y.

For Sale or Rent

STEEL SHEET PILING

Carn. MP-101 section-used redrivable

236 pcs. 62-50 ft.	44 pcs. 30-20 ft.
365 pcs. 50-40 ft.	250 pcs. 20- 8 ft.
188 pcs. 40-30 ft.	also "Y" pieces

IMMEDIATE SHIPMENT from Kentucky

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. CH 4474 St. Louis, Mo.

EST. 1904

DAVIDSON PIPE COMPANY INC.

FORMERLY
ALBERT & DAVIDSON PIPE CORP.
ONE OF THE LARGEST STOCKS IN THE EAST
Seamless and Welded ⅛" to 26" O.D.
All wall thickness Manufactured.
Specialty large sizes.
Cutting — Threading — Flanging — Fittings — Valves.

Call GEdney 9-6300
50th St. & 2nd Ave., B'klyn 32, N. Y.

S. S. PILING & CRANES

41-B Bucyrus—32 Marion Steamers
160 PCS. SP-4—19 to 23 Ft.
300 PCS. DP-2—AP-3—30 & 60 Ft.
400 PCS. Armco 16 Ft. Corrugated
500 PCS. SP-4—7 to 14 Ft.
DARIEN, 60 E 42nd St., N. Y., 17, N. Y.

FOR SALE—*Immediate Delivery*

C. I. Water Pipe A.W.W.A. Standard

BELL & SPIGOT— 12 inch, 16 inch, 20 inch, 24 inch and other sizes
FLANGED PIPE— 4 inch, 6 inch, 8 inch, 10 inch, 12 inch

C.I. Water Pipe Fittings—B & S. and Flanged—All Kinds and Sizes

SOIL PIPE—EXTRA HEAVY—8 inch, 10 inch, 12 inch, 14 inch

TAGCO, INC.
111 Front Street Hempstead, N. Y.
Tel.—Hempstead 2-5535 or 2-8857

We do a Nation-Wide business in

STEEL SHEET PILING

New & Used Rented & Sold

54 pcs. 60 ft. Carn. M115-Chicago
450 pcs. 32-20 ft. Beth. SP4-Alabama
270 pcs. 27-25 ft. Carn. M112-Minnesota
234 pcs. 20 ft. Inland 122-Mississippi
337-pcs. 20-19 ft. Carn. M116-Buffalo, N. Y.

Other lengths & sections at various locations

All sizes Vulcan & McKiernan Pile Hammers & Extractors for Rent and Sale—Shop Rebuilt
Regardless of location of your job, wire or write

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., St. Louis, Mo.
"WE BUY STEEL PILING FOR CASH"

FOR SALE

Steel sheet piling Beth. Section SP-6A lengths 20 to 25 feet. Now located at Reading, Pa. Write

EASTERN ENGINEERING CO.
4 N. North Carolina Ave., Atlantic City, N. J.

PIPE AND ACCESSORIES

IF IT'S MADE, WE HAVE IT!

Seamless and Welded—Every Size and Wall Thickness—Cast and Wrought Iron, Steel, Alloys

POWER PIPE FABRICATING
Banding, Coiling, Flanging, Threading, Beveling, Lining, etc.

Valves & Fittings
Piling & Fittings
Culverts

SPEED-LAY PIPE SYSTEMS
Write for brochure

ALBERT PIPE SUPPLY CO., INC
Berry at North 13th St
Brooklyn 11, N. Y.
Phone EVergreen 7-8100

For Sale Very Cheap

150 Piles 60'-100' Long. Both Fir and Pine—Location Flushing, New York

ERTHAL & GRAND
888 Montgomery Street, Brooklyn 13, New York
PResident 4-6795

WANT BUY

ALL SECTIONS
STEEL SHEET PILING
PILE HAMMERS & EXTRACTORS

DARIEN CORP.
60 E. 42nd St. New York 17, New York

"Opportunity" Advertising:
Think
"SEARCHLIGHT"
First

PIPE

VALVES and FITTINGS
All Sizes in Stock
NEW-USED
GREENPOINT IRON & PIPE CO INC
Biggest and Stock Streets Brooklyn, N.Y.

RAILS—TIES
TRACK ACCESSORIES

EVERYTHING FOR THE TRACK FROM
SWITCH TO BUMPER

75# ASCE—85# ASCE—
100# ARAA
NEW & RELAY TURNOUTS
in stock for
Prompt Shipments
with and without Switch Stands

MORRISON
RAILWAY SUPPLY CORP.

RAND BLDG. BUFFALO 3, N.Y. — EMPIRE BLDG. BIRMINGHAM 3, ALA.

---

85 # ASCE RELAYING RAILS
2500 TONS

FOR IMMEDIATE SHIPMENT

HYMAN-MICHAELS COMPANY
122 South Michigan Ave. Chicago 3, Illinois

Notice to Advertisers

Because of the Election Day Holiday, November 7th, the "Searchlight" pages of the

November 9th Issue of

ENGINEERING NEWS-RECORD

Close for press earlier than the usual weekly closing time.

The cooperation of advertisers is solicited in forwarding new copy, or changes of copy, to reach us accordingly.

FINAL CLOSING TIME

Display and Undisplayed Ads
Friday, October 27th

PROPOSALS

Thursday, November 2nd

Need RAILS?

You'll get them
"Faster From Foster"

Largest stocks in U.S.
NEW & RELAYING RAILS
Track Tools and Accessories

Foster guarantees material satisfactory or returnable freight both ways, our expense.

✔PIPE ✔ PILING ✔ WIRE ROPE & SLINGS

L.B. FOSTER CO.

Pittsburgh 30, Pa. — New York 7, N.Y.
Chicago 4, Ill. — Houston 2, Tex.

NEW—RAILS—Relayers

All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK

480 Lexington Ave., New York, N. Y. — Park Bldg., Pittsburgh, Pa.
Reno, Nevada — Carnegie, Pa.

NEW RAIL
20-25-30-40-45-50-60

RELAY RAIL
56-70-75-80-85-110

TIE PLATES
For all weights from 60 to 131

ANGLE BARS-Extra
400 pair 80 & 85 lb. 5" Punch
700 pair 9020 RA 5" Punch

TRACK SPIKES
300 kegs ⅝ x 6 & 9/16 x 5½ New

TURNOUTS
2—70 lb. ASCE No. 8
4—80 lb. ASCE No. 8 & 9

Also prompt shipment other sections

W. H. DYER COMPANY, Inc.
1859-X Railway Exchange Bldg., St. Louis, Mo.
Stocks at Eastern & Central Points
Dependable Quality—Quick Service

PROFESSIONAL SERVICES

Duval Engineering & Contracting Co.
General Contractors
FOUNDATION BORINGS
For Engineers and Architects.
Jacksonville, Florida

Consoer, Townsend & Associates
Water Supply—Sewerage—Flood Control & Drainage — Bridges — Express Highways—Paving—Power Plants, Appraisals — Reports — Traffic Studies—Airports.
351 East Ohio St., Chicago 11, Illinois

Soil Testing Services, Inc.
Theo. W. Van Zeist — Carl A. Metz
John P. Gnaedinger
Soil Borings — Rock Coring
Engineering Testing of Soils
Soil & Foundation Reports
325 N. Noble Street — Chicago 22

Metcalf & Eddy
ENGINEERS
Investigations — Reports — Design
Supervision of Construction
and Operation
Management — Valuation — Laboratory
Statler Building — 111 Sutter St.
Boston 16 — San Francisco 4

Gustave M. Goldsmith
Consulting Engineer
Structural and Building Design
Quantity Surveys
Production Planning
1734 Bella Vista, Cincinnati 37, Ohio

Jones, Henry & Schoonmaker
(formerly Jones & Henry)
Consulting Sanitary Engineers
Water Works, Sewerage & Treatment
Waste Disposal
Security Building — Toledo 4, Ohio

Albright & Friel, Inc.
Consulting Engineers
Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning, Reports, Valuations, Laboratory.
121 So. Broad St., Philadelphia 7, Pa.

Frederick H. Dechant
Consulting Engineer
Chairman of the Board,
Frederic R. Harris Inc.
Water Works, Industrial Wastes, Sewerage, Recovery Processes, Hydraulic Works, Gas Plants
Phila.: Fidelity Phila. Trust Bldg.
New York: 27 William St.

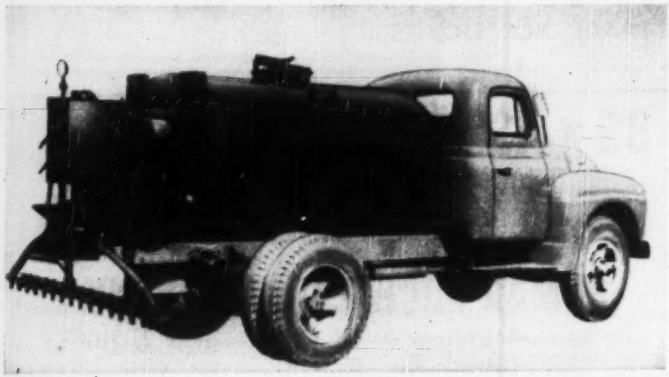
Inspecting and Testing

The Haller Testing Laboratories, Inc.
Testing and Inspecting of Construction Materials
861 2nd Avenue, New York 17, N. Y.
New York, N. Y. • Boston, Mass.
New Haven, Conn. • Plainfield, N. J.

REMEMBER ! !

You can depend on these consultants for a fast, accurate solution to your problems. Consult them when necessary.

NEW PRODUCTS

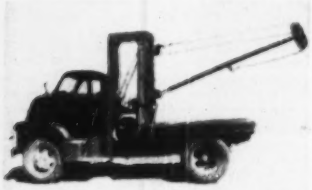


General-Purpose Distributor Handles All Bituminous Materials

Truck-mounted distributor is available in 600, 800, and 1,000-gal capacities. The Model RHU is designed for mounting on trucks with capacities of 1½ tons, or more. A general-purpose unit for handling all types of bituminous materials, it is standard equipped with quick-detachable non-folding stationary spraybar in lengths governed by pump capacity. Burners, power unit, including a 100-gpm rotary pump, are mounted at the rear. Constant spravline pressure is maintained through a by-pass valve to the tank.—Rosco Mfg. Co., 3118 Snelling Ave., Minneapolis 6, Minn.

Stud Welding Power Units

Two special power units for stud welding are announced by Nelson. One unit is a motor-operated generator set capable of welding studs up to and including ¾ in. in diameter. The other is a specially designed battery-operated unit that can be used for installing studs up to ½ in. in diameter with the Nelson automatic stud welding gun. The motor-operated set is equivalent to two conventional 300-amp generators in parallel. Either 220-v or 440-v 60-cycle ac can be used. The battery unit requires a 110-v ac convenience outlet for its operation and is particularly useful for construction jobs where welding generators or necessary power are not available. It consists of twelve 6-v 150-amp wet batteries. Automatic charging device is mounted on top of the hood.—Nelson Stud Welding Div., Morton Gregory Corp., Lorain, Ohio.



Hydraulic Truck Crane

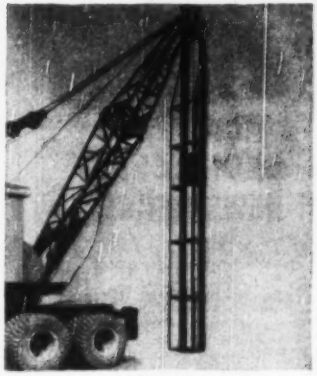
Hydra-Lift can be installed on all types of trucks and used with any make winch. All swinging and lifting operations are controlled from the truck cab. Features include: Positive action; full 180-deg swing; full 100-deg lift; boom telescopes from 11 to 16 or 20 ft; and a capacity varying from 6,000 lb with boom at 11 ft, to 2,500 lb with the boom at 20 ft.—Pitman Mfg. Co., 300 W. 79th Terrace, Kansas City 2, Mo.

Lightweight 2-Hp Engine

Lightweight gasoline engine is recommended for all applications within its power range requiring vertical shaft drives. It is of the twin-cylinder type. Features include trouble-free Mist-Type lubrication and simplicity of mounting. Adaptor mounting flanges incorporating a third bearing arrangement are available. Also available is a special flange with mounting bolt holes on an 8-in. circle. The engine can also be used with the NEMA adaptor flange which provides for interchangeability with direct-connected electric motors on frame sizes 43 to 49.—Power Products Corp., Grafton, Wis.

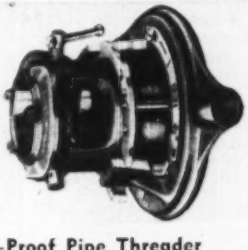
Belt-Repair Compound

Anti-abrasion plastic rubber compounds are recommended for protecting and repairing worn conveyor belts. Magic-Vule is applied to belt areas which are worn or damaged, showing exposed duck carcass. It can also be used to seal edges and rivet holes. Other applications of Magic-Vule include the coating of valves, pipes, and fittings, and to line chutes.—Magic Chemical Co., 121 Crescent St., Brockton 2, Mass.



Welded Pile-Driver Leads

All-steel all-welded pile driver leads and related accessory equipment are adaptable for universal use on most crane booms. The complete outfit consists of suitable adapter plates, 1-piece 30-ft channel-type leads with ladder, 2,500-lb drop hammer, 14-in. driving plug, and follower cap. Twenty-foot extension leads are also available.—Lewis Welding & Engineering Corp., Bedford, Ohio.



Jam-Proof Pipe Threader

Self-contained threader (Ridgid Model 65R) features a drive plate that automatically kicks out driving

(Continued on page 111)

"FWD extra-traction keeps our well-servicing on schedule"

Throughout the oil industry, the trend is to use FWD for more and more jobs. It's rapidly becoming the first choice wherever conventional trucks have roughest going and shortest life — and wherever safety and schedules are vitally important.

GET FULL FACTS on the entire team of FWD's. Models now range from 14,500 to 60,000 GVW. 4- and 6-wheel-drives. Ask for the free FWD Model Book.

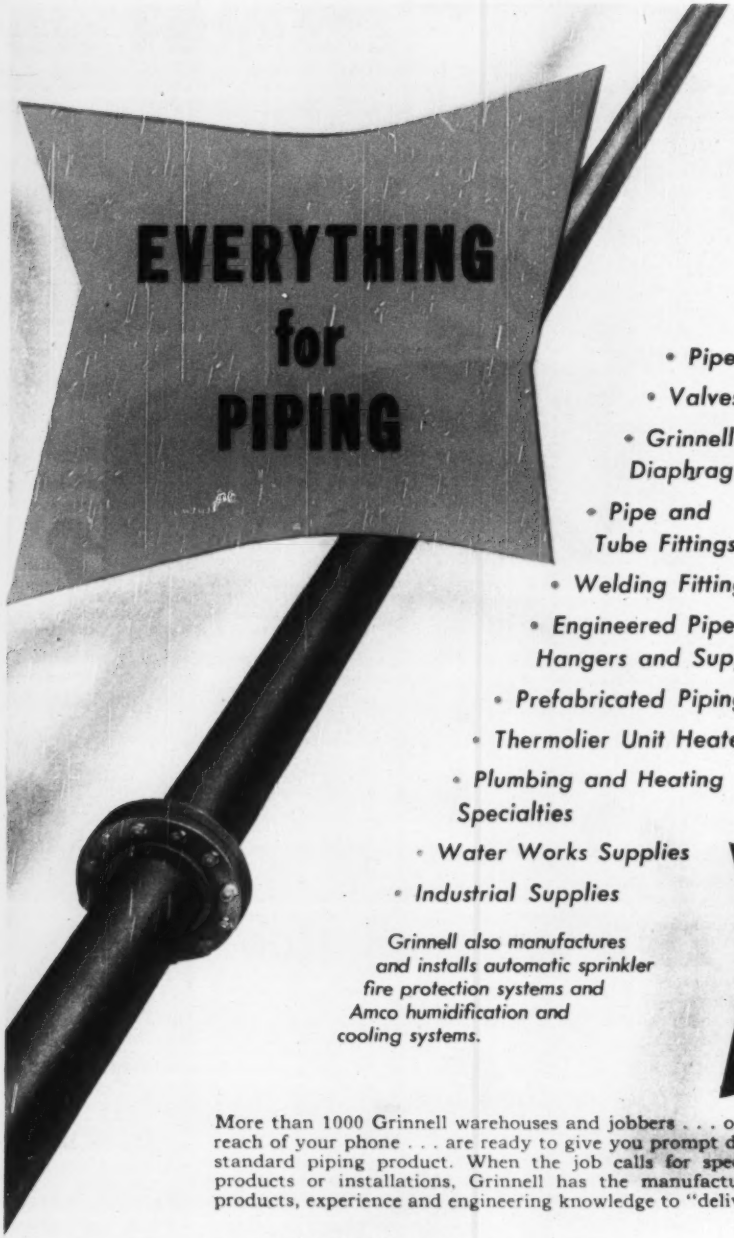
See your FWD distributor or Write FWD
THE FOUR WHEEL DRIVE AUTO CO.
Clintonville, Wisconsin
Canadian Factory: Kitchener, Ont.
World Wide Sales and Service

"We do more actual well-servicing because we spend less time between jobs"

"Our FWD trucks last longer — because proper distribution of load and power means less strain"

"Whether my haul is over-the-highway or off-the-road — I'd rather drive an FWD"

America's Foremost Heavy-Duty Truck



- Pipe
- Valves
- Grinnell-Saunders Diaphragm Valves
- Pipe and Tube Fittings
- Welding Fittings
- Engineered Pipe Hangers and Supports
- Prefabricated Piping
- Thermolier Unit Heaters
- Plumbing and Heating Specialties
- Water Works Supplies
- Industrial Supplies

Grinnell also manufactures and installs automatic sprinkler fire protection systems and Amco humidification and cooling systems.

at your nearby **GRINNELL WAREHOUSE** or **JOBBER**

More than 1000 Grinnell warehouses and jobbers . . . one within easy reach of your phone . . . are ready to give you prompt delivery on any standard piping product. When the job calls for specialized piping products or installations, Grinnell has the manufacturing facilities, products, experience and engineering knowledge to "deliver the goods."

GRINNELL

Grinnell Company, Inc., Providence, R.I. Branches: Atlanta • Billings • Buffalo • Charlotte • Chicago • Cleveland • Cranston • Fresno • Kansas City • Houston • Long Beach Los Angeles • Milwaukee • Minneapolis • New York • Oakland • Philadelphia • Pocatello • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane

ratchet pawl when standard length thread is cut. Thus, the lead screw therefore cannot jam on the workholder, the manufacturer states. A jam-proof drive plate is available for installation on present models of the 65R.—The Ridge Tool Co., Elyria, Ohio.

Window Balancer

Made of spring steel, Kwik-Out window balancers provide a simple means of maintaining constant pressure between window and jamb. This friction is said to be ample to hold the window in position, yet to allow the window to be moved up and down easily. The Kwik-Out principle eliminates sash cords and weights. The windows are instantly removable and replaceable without tools.—RCS Tool Sales Corp., Dept. A-73, Joliet, Ill.

Signal-Flag Standard

Ipco Wind-pruf flag standard consists of a specially designed 7-in.-dia. cast-iron base; 13x13-in. red canvas flag mounted on a 32-in. staff; and a non-rusting eye and ferrule at top of staff. Flag is held spread by a spring-steel stay inserted diagonally in a canvas pocket.—Industrial Products Co., 2715 N. 4th St., Philadelphia 33, Pa.

Square-Edge Form

Atlas form is designed for use where architectural concrete is required. The Square Edge form is supplied with an improved Atlas Captive Fastener. This fastener is permanently attached to the form, and eliminates waste motion due to extra handling and misplacing of parts. The forms are available in large panels that can be crane handle, or as light, individual units for erection by one man. They can

(Continued on next page)

with MIXERMOBILE M-7

New 2-yard MIXERMOBILE cuts concrete costs at the new state building, Portland, Oregon. (Pouring was done by the Weston Concrete Construction Co.)

The 2-yard MIXERMOBILE is a complete mobile concrete mixing and elevating plant. One mobile unit does all these things:

Handles aggregates — saves through use of dump trucks.
Accurate mixing — foolproof batch timer and electronic water meter.
Elevates on the job — saves cost of hauling and erecting tower.
Portable elevating and agitating storage plant for *Ready Mix*.

All in one mobile unit . . . entire operation handled by one man. Mixes up to 50 yards of concrete per hour. This amazing M-7 MIXERMOBILE is built for rugged use . . . it's low in maintenance, efficient, and flexible. The M-7 moves from job to job (highway speed 40 mph, meets all highway requirements) saving money on every job . . . making lower bids possible. FEATURES INCLUDE: Electronic water meter, measures water from zero to 100 gallons automatically . . . Hydraulic Controls; Power Divider Transmission; Discharge Timer.

M-7 Ready For Travel

WRITE TODAY FOR LITERATURE AND YOUR NEAREST DEALER

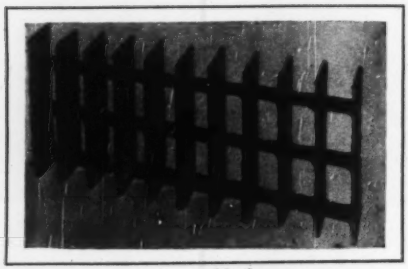
We reserve the right to make improvements in design and specifications without notice.

MIXERMOBILE MANUFACTURERS

MIXERMOBILE

Box 7527 • Portland 20, Oregon

FOR TWELVE YEARS



. . . under extreme conditions

The section illustrated was cut from a panel of Hendrick Mitco that for twelve years was in an open yard between buildings in an industrial plant. It not only was exposed to rain, snow and atmospheric corrosion, but was in a drainage area and actually under water much of the time.

The joints show the least corrosion and have no crevices or cracks, although the side surfaces of the bars have been roughened and partially eaten away.

Write for detailed information on Hendrick Mitco Grating, Open Steel Flooring, Shur-Site Treads, and Armorgrids.

SEE OUR CATALOG IN SWEET'S

HENDRICK

Manufacturing Company

Perforated Metals
Perforated Metal Screens
Architectural Grilles
Mitco Open Steel Flooring,
"Shur-Site" Treads and
Armorgrids

45 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

Immediate Deliveries
SALES or RENTALS

Up Faster-no bolts to master

Use Ezebilt for all your scaffolding requirements—fastest assembly ever devised. Features exclusive "Gravity-Lock" connections—no wing nuts, no loose parts! Complete stocks on hand for any size job.

Write for Complete Catalog

UNIVERSAL
MANUFACTURING CORP.
ZELIENOPLE, PA.
Distributors in All Principal Cities

Diamond
Core
Drilling

CORE BORINGS
for Foundations, Dams,
Bridges and all Heavy
Structures
GROUT HOLES

Tinney Drilling Co.
Grafton, W. Va.

"GUNITE" CONCRETE
(Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE & MASONRY • CANAL, DITCH AND DRAIN LINING

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.

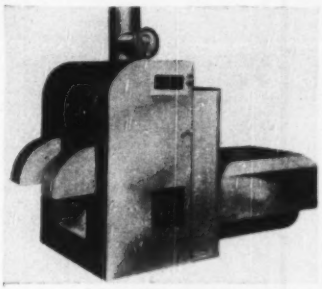
District Branch Offices

S. T. Burton Co., 228 N. LaSalle St., Chicago 1, Ill.; B. H. Mueller, Distr. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo.; Philip D. Barnard, Distr. Mgr. 2036 Addison, Houston 5, Tex.

Branch Offices: Denver, Dallas, New Orleans

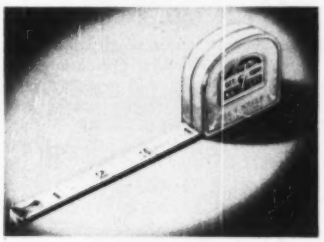
See our catalog in Sweet's

be used with wood or steel walers using any standard make wall ties. Basic units are 12-in. wide and are supplied in varying lengths of 4 to 8 ft.—IRVINGTON FORM & TANK CORP., DEPT. ENR-E, 20 VESEY ST., NEW YORK 7, N. Y.



Concrete Products Hydrator

Automatic self-contained curing unit operates in conjunction with concrete products kilns. Heavy water-soaked air is in forced circulation, to provide hydration of the cement. After the kiln is filled, the remote control panel handles all operations—starts the gun-type oil burner; stops it when curing cycle is completed; controls forced air circulation; automatically turns water spray nozzles on and off. Dimensions are: Length, 68½ in.; height, 56 in.; width 32¼ in.—LITH-I-BAR CO., HOLLAND, MICH.



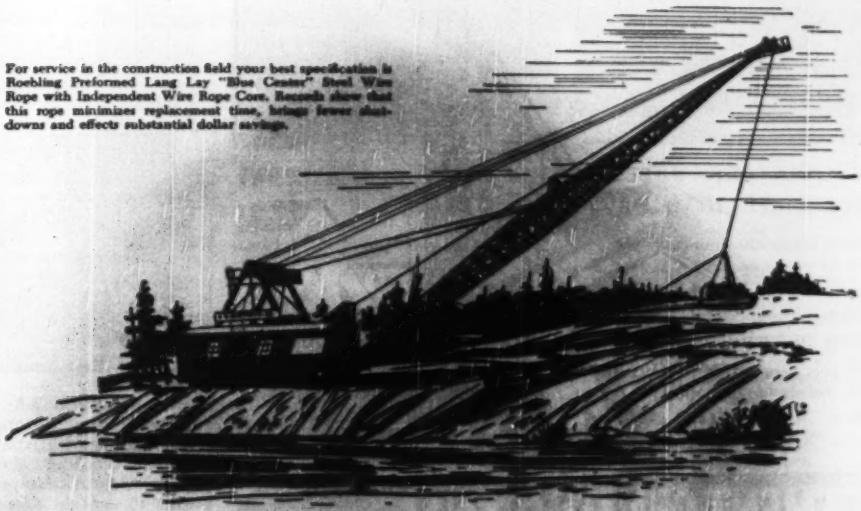
Steel Measuring Tape

Improved White-Tape is said to be exceptionally legible. It is finished in bonderized snow-white enamel with jet-black markings and graduations baked into the enamel base. Tape is white on both surfaces and is graduated on both edges of the top surface. Self-actuating brake permits tape to travel freely in and out of the case, and to clamp firmly at any position when tape is released. Available in 6, 8, and 10-ft lengths.—EVANS & CO., NEWARK, N. J.

Rust-Covering Paint

Rustorize consists of a special metal primer and a protective enamel top coat. It is recommended for painting rusty interior and exterior metal sur-

(Continued on page 114)



For service in the construction field your best specification is Roebling Preformed Lang Lay "Blue Center" Steel Wire Rope with Independent Wire Rope Core. Records show that this rope minimizes replacement time, brings fewer shutdowns and effects substantial dollar savings.

Preformed that lasts longer and saves money!... that's why

Today it's Roebling!

YOU WANT ROPE that's *extra* tough, *extra* long-lived! And you *get* these extras in Roebling Preformed "Blue Center" Wire Rope, for "Blue Center" steel has completely superior resistance to abrasion, shock and fatigue. Roebling developed and is the only maker of "Blue Center" steel . . . and Roebling research, workmanship and modern, precision machines are your added assurance of rope quality that pays off.

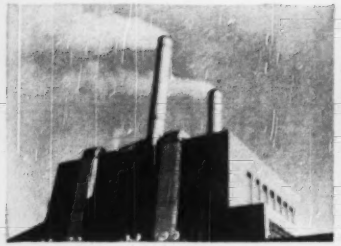
But for everything wire rope can give, be sure to get Preformed. Roebling Preforming makes rope easier to handle and install. It can be cut without seizing. It spools better . . . is not inclined to set or kink . . . minimizes vibration and whipping.

There's a Roebling wire rope of the right construction, grade and size for every type and make of rope-rigged equipment. Have your Roebling Field Man tell you which rope will give the best and the lowest-cost performance for every installation. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

A CENTURY OF CONFIDENCE

Atlanta, 934 Avon Ave. ★ *Boston*, 51 Sleeper St. ★ *Chicago*, 5525 W. Roosevelt Road ★ *Cincinnati*, 3253 Fredonia Ave. ★ *Cleveland*, 701 St. Clair Ave., N. E. ★ *Denver*, 4801 Jackson St. ★ *Houston*, 6216 Navigation Blvd. ★ *Los Angeles*, 216 S. Alameda St. ★ *New York*, 19 Rector St. ★ *Philadelphia*, 12 S. Twelfth St. ★ *Portland*, 1032 N. W. 14th Ave. ★ *San Francisco*, 1740 Seventeenth St. ★ *Seattle*, 900 First Ave. S.



PRECIPITATORS, BREECHINGS, STACKS AND HOPPERS ALL LINED WITH "GUNITE" BY CEMENT GUN CO.

Photos above show units number 1 and 2 of the new 150 m.w. turbo-generator steam electric station of the Pennsylvania Power and Light Company at Sunbury, Pa.

The precipitators, breechings and stacks, visible on the exterior of the building, were all lined with reinforced "Gunite" by Cement Gun Company as were the forty coal hoppers inside the building.

Many instances of repair, remodeling and new construction with "GUNITE" are described and pictured in Bulletin A 2400. A request on your letterhead will bring your free copy by return mail.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE CEMENT GUN

The ONLY Culvert Metal Made of

CONTINENTAL STEEL CORP. KONIK KOKOMO, IND.

For culvert sheets that withstand the abuses of installation and the rigors of exposure, you can't beat Continental KONIK. This open hearth culvert metal contains copper, nickel, chromium, and other elements that add strength and long life. KONIK, further protected by a heavy coating of zinc, is an ideal culvert metal that gives "carefree" service for years and years. See it at your distributor or write Continental at Kokomo, Indiana.

CERTIFIED AND GUARANTEED

Ask your culvert distributor to see the KONIK Warranty. Read the Certified Analysis...it is your guarantee that KONIK offers extra years of culvert service.

CONTINENTAL STEEL CORPORATION

FENCE • BARBED WIRE • POSTS • NAILS • ETC.

DRILLING CONTRACTORS

DIAMOND AND SHOT CORE BORINGS—DRY SAMPLE BORINGS

Foundation Testing for Bridges, Dams and All Heavy Structures

Also

Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment

SPRAGUE & HENWOOD, Inc.
Scranton, Pa. Dept. E, U. S. A.

GUNITE
PNEUMATICALLY PLACED CONCRETE
DENSE · DURABLE · HIGH STRENGTH
for
Restoring Disintegrated Concrete
Dam, Dock and Bridge Repairs
Steel Encasement and Fireproofing
Sewer, Water Pipe and Penstock Linings
Stack and Bunker Linings
Wood Pile Casings—Pressure Grouting
Prestressed Tanks and Silos

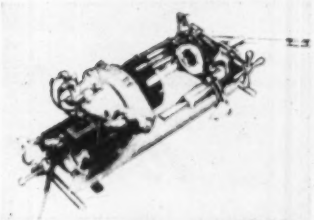
Get in touch with us for engineering data and estimates

GUNITE CONSTRUCTION CORPORATION
420 LEXINGTON AVE., NEW YORK 17, N.Y.
MURRAY HILL 3-7699

faces. According to the manufacturer, the only preliminary step required in using Rustorize is wire brushing of loose rusty scale. Applied by brush or spray, it is said to form a waterproof, air tight, elastic film that stops and prevents further rust.—McCORMACK-MEDL CORP., TECHNICAL COATINGS DIV., FRONT & KAIGHN AVE., CAMDEN 3, N. J.

Dustless Belt Sander

Heavy-duty 4-in. belt sander (Model 500) features balanced construction for easy operation. The 4x27-in. belt provides 25 sq in. of abrasive working surface. A high-powered turbine-fan vacuum system is said to provide dust-free operation. The Model 500 operates on 115-v ac/dc 25-60 cycle, single-phase circuits; with a 230-v model available.—PORTER-CABLE MACHINE CO., 2504A N. SALINA ST., SYRACUSE 8, N. Y.



Pipe Threader, Cutter

Model E machine can be used for cutting and threading pipe, bolts, and conduit. It weighs 185 lb, and has a capacity of 8 in. It is lever fed. An outboard, eccentric spool, steady rest prevents whipping of long-length pipe. The Model E uses the same die heads and other attachments as the Beaver Models A and B.—BEAVER PIPE TOOLS, INC., WARREN, OHIO.

Alcohol-Type Anti-Freeze

Winterset is described as a 100% glycol-base permanent anti-freeze. According to the manufacturer, Winterset is boilproof, and one filling will last the entire winter. Specomite, a chemical inhibitor, prevents rust and corrosion.—SPECO, INC., 7308 ASSOCIATE AVE., CLEVELAND 9, OHIO.

Duct-Sizing Calculator

Multiple-scale circular slide rule provides answers to duct-sizing problems.

By setting to proper air volume and velocity, the Ductulator will indicate friction loss per 100-ft of duct, and the diameter of round duct or dimensions of rectangular duct that will carry the air load. All answers are obtained with one setting of the Ductulator. Recommended and maximum duct velocities for all general installations appear on the reverse side.—The Trane Co., La Crosse, Wis.

Truck-Mounted Extendable Boom

Steel boom mounts on any 1½-ton or larger truck. Sixteen-feet-long closed, the boom extends to 26 ft. Hydraulic in operation, the Industrial Monkey is controlled by worker on the self-leveling platform by an arrangement of foot buttons. Or, it can be operated from the truck cab. Power is obtained from the truck's transmission through a take-off.—Capital Industries, Inc., Spalding Bldg., Portland 4, Ore.

New Product Briefs

Granette coating for painting all types of buildings consists of silica and granite granules floated in a special paint base. Maker: Aerial-Detroit Co., Inc., Detroit 26, Mich.

Diesel-electric generator line is expanded to eleven models ranging from 60 to 133 kw. Maker: Murphy Diesel Co., Milwaukee 14, Wis.

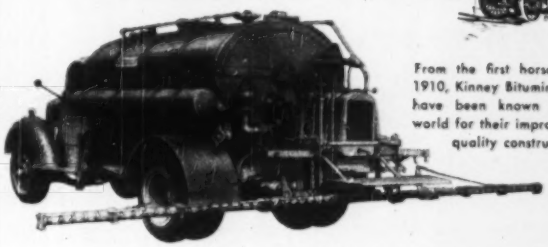
Box-car opener features positive locking hook which cannot become detached in operation. One-man operated, it can be swung 180 deg, but locks firmly when assuming the pulling position. Maker: The Nolan Co., Bowerston, Ohio.

Plastic wall tile eliminates need for grouting joints by providing precision-matched edges where tiles butt, allowing each tile to directly contact the next. Maker: Hachmeister-Inc., Pittsburgh, Pa.

Koolmaster Awning Fan is a ventilating unit that fastens on the outside of buildings. It can handle 5,000 cfm and will accommodate itself to 28, 30, 32, and 36-in. windows. Maker: Air Equipment Co., Chicago, Ill.

KINNEY BITUMINOUS DISTRIBUTORS

FOR OVER 40 YEARS



From the first horse-drawn unit of 1910, Kinney Bituminous Distributors have been known throughout the world for their improved design and quality construction.

PUMP: Only Kinney has the famous SD rotating plunger pump that's accurate as a meter and always dependable.

HEATING SYSTEM: Two-burner unit placed low in tank heats safely, uniformly.

CONTROLS: Simple, three-way control valve—right at operator's fingertips—saves bitumen, speeds application.

PUMP ENGINE: Rugged Hercules engine, complete with transmission and compressor, has ample power for any job.

SPRAY EQUIPMENT: Handles tar, asphalt, cutback, and emulsions without adjustment. Available with Fraco circulating hot spray bar when desired.

KINNEY MANUFACTURING CO. 3527 WASHINGTON ST., BOSTON 30, MASS.

NEW YORK • CHICAGO • CLEVELAND • PHILADELPHIA • LOS ANGELES • SAN FRANCISCO

Write today for complete information.

More Yardage with Less Labor

Sauerman Slackline builds cofferdam across gorge on river

Sauerman Scraper digs volcanic ash from hill and loads into cars.

How Sauerman Machines Cut Costs

With one man at the controls a Sauerman Scraper or Slackline Cableway can reach out 1,000 ft. or more and dig, haul and dump sand, gravel or any bulk material. Simple operation! Economical use of power!

A Sauerman machine can be installed to reach across a pit, pond, river or stockpile, or up to the top of a hill. It moves material rapidly anywhere within its wide radius. Flexible for any ground conditions. Costs only a few cents per cubic yard handled. Gas, electric or diesel.

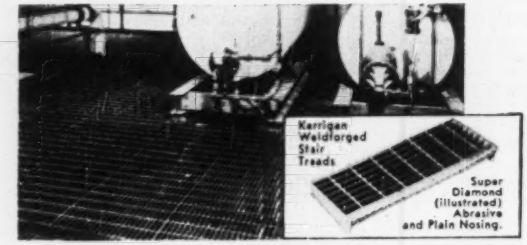
Write for new Sauerman Catalogs

Rope Haulage Equipment Specialists Since 1909

SAUERMAN BROS., Inc.

532 S. CLINTON ST. CHICAGO 7, ILLINOIS

A SAFER, STRONGER OPEN STEEL FLOOR for every industry



You get an extra margin of safety with Kerrigan Weldforged steel flooring and stair treads. Continuous spiral cross bars, slightly above bearing bars and alternating right and left, leave no slick spots. Cross bars are Weldforged into bearing bars to form a one-piece unit of great strength.

For safety, strength, maximum light and ventilation, easy installation and maintenance, always specify Kerrigan Weldforged grating and stair treads. Its uses are many, indoors and out—open flooring, stair treads, sidewalk doors, catwalks, subway grating . . . to name only a few.

Send today for desk size sample and latest catalog. Write Department 23

Weldforged GRATING DIVISION

KERRIGAN IRON WORKS, INC.
GENERAL SALES OFFICE, 274 MADISON AVE., N.Y.C.
MID-WEST SALES OFFICE, 2725 W. PETERSON AVE., CHICAGO

DON'T BUY ANY ROTARY MASONRY DRILL

TERMITES get through concrete, masonry, tile faster, quieter . . and cheaper!

. . . until you get the "HOLE" story

That *hole* in a TERMITE Rotary Drill means there's no "break" in the spiral worm, which was designed to carry off the cuttings and dust. The result . . . cuttings are carried off quicker to give you faster, more accurate holes. ¶ Get the *complete* TERMITE story before you buy your rotary masonry drill. Write today.

U. S. Pat. 2425132
Other Pats. Pending

Use only **TERMITES**

ORDER TODAY!

CONCRETE TERMITE DRILL CO.
2081 Foothill Blvd. Pasadena 8, Calif.
Eastern Sales Office, Rm. 5134, Empire State Bldg., New York 1, N. Y.

LEFAX POCKET SIZE TECHNICAL DATA BOOKS $1. EACH

● Printed on loose leaf, six hole, 6¾" x 3¾" bond paper, each book contains about 140 pages of technical data, presenting condensed, accurate and essential data for the student, engineer, technical worker and business man.

Architecture	Radio	Trig.-Log Tables
Home Heating	Television & FM	Analytic Chemistry
Illumination	Electricity, AC	Highway Engineering
Electrician's Data	Electricity, DC	Mechanics of Materials
Builder's Data	AC Motors and Generators	Power Trans. Mach'y.
Lumber Data	Transformers	Thermodynamic Tables & Charts
Air Conditioning	Relays, Meters	Phys. & Thermodynamic Data
General Math.	Hydraulics	Phys. & Org. Chemistry
Math. Tables	Surveying	
Physics	Mech. Drawing	
Chemical Tables	Machine Design	
Metals	Machinists Data	
Gen'l. Chemistry	Piping Data	
Reinf. Concrete	Surveying Tables	
Building Constr.	Metallurgy	

● Write for FREE Catalog (over 2000 listings). See for yourself how helpful LEFAX can be to you. Send $1. for each book, or $5. for any six books listed above, 3c.

LEFAX, Dept. ER 6 Philadelphia 7, Pa.

CONTRACTORS' FIELD OFFICE TRAILER
Designed by Road Contractor
26' Aluminum Body—8' Wide
2 Rooms—2 Built-in Desks
1 Drafting Table—Built-in Letter Files—Cabinets—Closets—Drawers—etc.
Price $2695.00 f.o.b. Baltimore

TRAILER VILLAGE, INC.
8645 Pulaski Highway, Baltimore 21, Md.
Phone: Essex 2233

Manufacturers' Publications

Air-Line Cleaner—Protection of air-powered tools, gages, and process equipment against air-borne impurities is the subject of Bulletin 176. Illustrated with 3-color cut-away views, this bulletin describes equipment for removal of water, oil, and pipe scale from compressed-air systems.—R. P. Adams Co., Inc., E. Park Drive, Buffalo 17, N. Y.

Automatic Vari-Pitch Drive—This method of instant speed control covering most speed-changing needs from 1½ to 40 hp is described in a 12-p bulletin. The bulletin (No. 20B-7223A) carries instructions and tables to provide sufficient engineering data for designing a drive for almost any speed range and horsepower within the range of the drive. Recommended applications include providing a variable speed for driving mixers, agitators, and other types of equipment.—Allis-Chalmers Mfg. Co., 1018A S. 70th St., Milwaukee, Wis.

Pullers, Maintenance Tools—Bulletin P. E. 50 (20 pp) illustrates and describes tools designed for removing and replacing operations. It features a description of the OTC pulling system which, with various adaptors and attachments, can be used for removing bearings, bushings, and gears, and for other types of push-pulling jobs without damage to expensive parts. The booklet is thoroughly illustrated with on-the-job photographs.—Owatonna Tool Co., 380 N. Cedar St., Owatonna, Minn.

Sectional Ladder Scaffolds—Lightweight, aluminum rolling-type ladder scaffold is the subject of Bulletin PSS-20. The bulletin features a graphic description of the various advantages claimed for these scaffolds which are available in various heights and with spans of 6, 8, and 10 ft. The rigid-joint construction and spring-lock attachment are described in detail—Patent Scaffolding Co., 3821 Twelfth St., Long Island City 1, N. Y.

Aluminum Extrusions—Manual of drafting standards for aluminum extrusions outlines certain basic practices necessary, and attempts to standardize these practices as far as practical. The manual begins with definitions and identifications of aluminum extruded products, with later sections covering standard tolerances, proper dimensioning, and

NEARLY

7/8

OF THE WATER YOU *SUPPLY* MUST ALSO BE *REMOVED!*

Your complete city water pumping cycle from supply through disposal can be efficiently and economically handled by one make of pump

PEERLESS PUMPS

LOOK TO THE LEADER

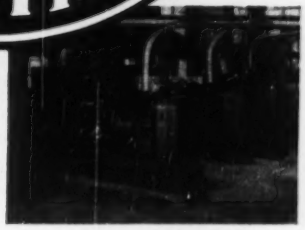
LOOK TO PEERLESS

FOR UNDIVIDED RESPONSIBILITY FOR THE WHOLE JOB

Cut your time, investment and maintenance by standardizing on Peerless as your one source of pumps

FOR WATER SUPPLY

Peerless Deep Well or Close-Coupled Turbine Pumps for underground or surface lifts. Capacities up to 30,000 gpm and heads to 1,000 ft.

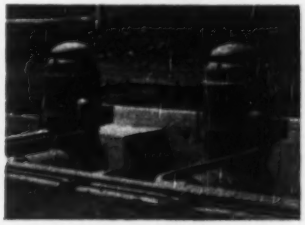


FOR BOOSTING

Peerless Horizontal Centrifugal Type A or Type TU for circulation and boosting under pressure. Capacities up to 70,000 gpm and heads to 500 ft.

FOR SEWAGE DISPOSAL

Peerless vertical and horizontal Non-clog Sewage Pumps. Capacities up to 7,000 gpm and heads to 70 ft. Positive operation on solids in suspension.



FOR DRAINAGE

Peerless Hydro-Foil Pumps in propeller and mixed flow types for moving water in large quantities. Capacities up to 220,000 gpm and heads 2 to 60 ft.

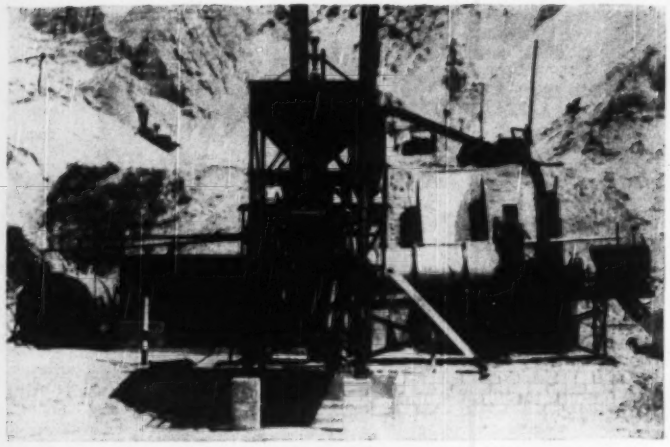
Individual descriptive and illustrated Bulletins are available on each of these types of Peerless pumps. Write for your copies.

PEERLESS PUMPS fmc

PEERLESS PUMP DIVISION

FOOD MACHINERY AND CHEMICAL CORPORATION

Factories: Los Angeles, California and Indianapolis, Indiana.
Offices: New York, Atlanta, Chicago, St. Louis, Phoenix, Fresno, Los Angeles, Dallas, Plainview and Lubbock, Texas, Albuquerque, N. M.



An Economical Bituminous Mixing Plant

economical in first cost and in operation—especially adapted to maintenance work and small paving jobs

Pictured above is a Model CH-9 Hetherington & Berner bituminous mixing plant. This is a medium capacity (15 to 25 tons per hour) batch mix type plant which may be used for producing either hot or cold mix work. Simple and sturdy in design, CH-9 plants are economical in first cost and in operation, and are ideally adapted to maintenance work and small paving jobs.

CH-9 plants may be equipped with either gasoline or diesel engines, or they may be electrically operated. Aggregate feeder, dust collector for dryer, and screen are available as optional equipment.

Contractors and highway officials interested in producing the highest type of mixes with a minimum investment in plant and low operating costs will find it will pay them to investigate CH-9 plants.

See your local H & B distributor, or write direct for Bulletin MC-49.

THE HEAVY DUTY
MOTO-PAVER

designed especially for heavy mixing, retread and stabilization jobs under the toughest of operating conditions. No other method or machine can produce comparable results at comparable costs. Write for Bulletin MP-49.

HETHERINGTON & BERNER INC.

Engineers . . . Manufacturers

730 KENTUCKY AVENUE INDIANAPOLIS 7, INDIANA

standard abbreviations. Recommendations on arrangement and lettering of drawings are included.—THE ALUMINUM ASSN., 420 LEXINGTON AVE., NEW YORK 17, N. Y.

Portable Conveyors—Bulletin 374 (8 pp) describes the complete range of the Barber-Greene Model 374 heavy-duty portable conveyor. The bulletin lists fields of use and types of products it will handle. A series of sketches show typical applications. Accessories, such as feeders, screens, and hoppers, are pictured and possible usage described. Construction features are illustrated and their operational advantages described.—BARBER-GREENE CO., AURORA, ILL.

Principles and practices in the use of wellpoint systems are described in a handbook now available. This handbook contains information on how a wellpoint system functions and describes methods of planning, layout, installation, operation, and removal of the system. The manual is pocket-size, 102 pp in length, and contains 59 illustrations and diagrams. Price is $1.50.—GRIFFIN WELLPOINT CORP., 881 E. 141ST ST., NEW YORK 54, N. Y.

Reproduction Materials—Data book (72 pp) describes Kodagraph reproduction materials for office photocopying and engineering reproduction. Diagrams illustrate methods of solving special reproduction problems and both techniques and equipment are explained. Particular attention is given to restoration and reproduction of worn, damaged, or strained engineering drawings and to methods of eliminating handwork in cases where drawings must be changed. A trouble-shooting guide lists causes of unsatisfactory prints and describes remedies for them. Price of the booklet is 50¢—EASTMAN KODAK CO., INDUSTRIAL PHOTOGRAPHIC DIV., ROCHESTER 4, N. Y.

Stang WELLPOINT SYSTEM

For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

JOHN W STANG CORPORATION
2 Broadway, New York 4, N. Y. 2123 S. 56th St., Omaha, Nebr. 8221 Atlantic Ave., P.O. Box 631, Bell, Cal.

MOTT Diamond Core Drilling Contractors

FOUNDATION TESTING for Bridges, Dams, Heavy Structures
PRESSURE GROUTING

MFR'S DIAMOND & SHOT CORE DRILLS, GROUT MIXING MACHINES, PACKERS AND GROUT PUMPS

MOTT CORE DRILLING CO.
HUNTINGTON, W. VA.

Drag Scraper Buckets—Crescent buckets for a wide variety of drag-scraper operations are illustrated and described in Section J-1 of the Sauerman general catalog. Both standard types and special designs are included. Each bucket is illustrated. Specifications listed cover size of bucket, size of wedge sockets, and approximate weight. Use of these buckets with boom machines and with tractors is described in detail. The catalog is replete with on-the-job photographs showing typical drag-scraper applications.—SAUERMAN BROS., INC., 532 S. CLINTON ST., CHICAGO 7, ILL.

Pumps—Manual 2300 describes pumps for handling corrosive and non-corrosive liquids; for handling solids-carrying liquids; and for handling dry and semi-dry materials. For the first type of service, Yeomans produces a line of vertical submerged pumps; for the second, horizontal and vertical; and for the third, the specially designed Transporter. Each of these types is illustrated and described. Cutaway drawings show special construction and design features.—YEOMANS BROS. CO., 1445 N. DAYTON ST., CHICAGO 22, ILL.

Hardfacing Catalog—Illustrated catalog (20 pp) contains detailed information on the complete Airco line of hardfacing alloys. Description of product, typical uses, mechanical properties, chemical analysis, and a brief outline of recommended procedures are included. The data is supplemented by sections containing related information.—AIR REDUCTION SALES CO., 60 E. 42ND ST., NEW YORK 17, N. Y.

Centrifugal-Pump Guide—Economical pumping units are catalogued in a 16-p "Handy Guide to Selection of Centrifugal Pumps". A wide variety of units are indexed in this bulletin including close-coupled, pedestal, double-suction single stage, multi-stage, self-priming, fractional horsepower, coolant and circulating, fire, process, solids handling, marine, rubber-lined, sewage, axial, and mixed-flow pumps. Head capacity charts and tables for various types of pumps are listed along with data on sizes, capacities, and construction features.—ALLIS-CHALMERS MFG. CO., 1018 S. 70TH ST., MILWAUKEE, WIS.

Corrosion-Proof Cements—Bulletin 5-1 describes the Atlas line of resin, sulfur, silicate, and asphaltic cements. Information on each cement is compiled in handy chart form to simplify selection of the correct cement for a specific application.—THE ATLAS MINERAL PRODUCTS CO., 45 WALNUT ST., MERTZTOWN, PA.

ADVERTISERS IN THIS ISSUE

Alemite Div., Stewart-Warner Corp. 71
Atlantic Steel Corp. 86
Atlas Powder Co. 38
Autolene Lubricants Co. 4, 5

Barco Mfg. Co. 83
Bay City Shovels, Inc. 37
Belmont Iron Works 66
Berger & Sons, Inc., C. L. 2
Builders Providence, Inc. 81
Butler Mfg. Co. 76
Byers Co., A. M. .... 2nd Cover

Carnegie Illinois Steel Corp. 60, 61
Cement Gun Company 114
Chapman Valve & Mfg. Co. 87
Chevrolet Motor Div. G. M. C. 78
Chicago Pneumatic Tool Co. 84
Cities Service Companies 10
Cleco Div., Reed Roller Bit Co. 79
Clow & Sons, James B. 20
Complete Machinery & Equipment Co. 79
Concrete Termite Drill Co. 116
Continental Steel Corp. 114

Douglas Fir Plywood Assn. 72, 73

Electric Tamper & Equipment Co. 56
Eppinger & Russell Co. 66

Four Wheel Drive Auto Co. 109

General Electric Co. 8, 9
Goodyear Tire & Rubber Co. 1
Grinnell Co., Inc. 110
Gunite Concrete & Construction Co. 112
Gunite Construction Co. 114

Heil Co. 64, 65
Hendrick Mfg. Co. 112
Hetherington & Berner, Inc. 118

Industrial Brownhoist Corp. 66
Inland Steel Co. 18
International Harvester Co. 89
Irving Subway Grating Co. 82

Kerrigan Iron Works, Inc. 116
Kinney Mfg. Co. 115

Lefax Co. 116
Lock Joint Pipe Co. 57

MacArthur Concrete Pile Corp. 91
Master Builders Co. .... 3rd Cover
McGraw-Hill Book Co. 62, 85
McKiernan-Terry Co. 67
Metalizing Engineering Co., Inc. 50
Mixermobile Mfg. Co. 111
Monsanto Chemical Co. 53
Morin Mfg. Co. 88
Mott Core Drilling Co. 118

Naylor Pipe Co. 12
Northwest Engineering Co. 3

Ohio Locomotive Crane Co. 80
Oliver Corp. 13

Peerless Pump Div., of Food Machinery Corp. 117
Pennsylvania Drilling Co. 81
Portland Cement Assn. 54
Pressure Concrete Co. 80

Ramset Fasteners, Inc. 63
Raymond Concrete Pile Co. 16
Roebling's Sons Co., John A. 113
Rust-Oleum Corp. 14
Ryerson & Sons, Inc., Jos. T. 79

Sauerman Bros., Inc. 115
Spencer, White & Prentis, Inc. 82
Sprague & Henwood, Inc. 114
Stang Corp., John W. 118
Stone & Webster Engineering Corp. 74
Superior Concrete Accessories 58
Symons Clamp & Mg. Co. 51

Texas Company .... 4th Cover
Thew Shovel Co. 45
Timken Roller Bearing Co. 11
Tinney Drilling Co. 112
Torrington Co., Bantam Bearings Div. 15
Trailer Village, Inc. 116
Truscon Steel Co. 6
Tube Turns, Inc. 68, 69

Underpinning & Foundation Co. 81
U. S. Pipe & Foundry Co. 49
U. S. Steel Subsidiaries 22, 60, 61
United Steel Fabricators, Inc. 70
Universal Atlas Cement Co. 22
Universal Mfg. Co. 112
Universal Sewer Pipe Corp. 7

Vacuum Concrete, Inc. 86
Vulcan Iron Works 48

Weinman Pump Mfg. Co. 55
Western Rock Bit Mfg. Co. 80
Western Waterproofing Companies 82
Williams Co., J. H. 80
Wood & Co., R. D. 77

Professional Services 107

SEARCHLIGHT SECTION

(Classified Advertising)

Employment
Positions Vacant 97, 98
Positions Wanted 98, 99
Part Time Work 99
Selling Opportunities Wanted 99
Employment Services 97

SPECIAL SERVICES 99
Contract Work 99

Educational
Schools 99
Tutoring 99

Business Opportunities
Offered 99

Equipment
(Used or Surplus New)
For Rent 102
For Sale 99-105
Piling 107
Pipe 107
Rail 107
Surveying Instruments 107

Wanted
Equipment 99, 106

Advertisers' Index 96

ENGINEERING NEWS-RECORD

E. E. WEVENETH, *Manager* — HOWARD T. OLSEN, *Business Manager*

Sales Representatives: D. S. Robertson and E. A. Callahan, Jr., 330 W. 42nd St., *New York*; Fred G. Hudson, L. H. Hunt, W. G. Payne, 520 N. Michigan Ave., *Chicago*; J. W. Otterson, R. Dorland, 68 Post St., *San Francisco*; A. B. Cozens, 17th & Sansom Streets, *Philadelphia*; E. E. Duff, Jr., Hanna Bldg., *Cleveland*; B. E. Horn, Penobscot Bldg., *Detroit*; W. E. Bonsell, Continental Bldg., *St. Louis*; H. L. Keeler, 1111 Wilshire Bldg., *Los Angeles*; Ralph Maultsby, Rhodes-Haverty Bldg., *Atlanta*; J. H. Allen, First National Bank Bldg., *Dallas*. *Other Sales Offices:* 738-39 Oliver Bldg., *Pittsburgh*; 1427 Statler Bldg., *Boston*; Aldwych House, *London*.

Port Development and Construction in 1950

W. F. Heavey
Manager, Port of Houston
Houston, Tex.

A great port is never completed. The world of trade and commerce does not stand still; types and sizes of ships change; and a port must meet this situation by ever improving itself. New methods and technologies must be applied to meet these ever-changing conditions.

The Year 1950 will probably be the record year in development and construction of ports all over the world and especially in the United States.

• **New designs emerge**—For quite a number of years the construction of wharves and docks has been more or less on a conventional style, depending on type of foundation encountered. It is interesting to note that engineering thought is finally getting around to applying improved engineering design to the construction of port facilities. There are two outstanding examples of this, one the introduction of concrete-box caissons for the reconstruction of new Pier 57, Hudson River, by the Department of Marine and Aviation of the City of New York (ENR Sept. 7, p. 23) and the construction of a second steel sheetpile cellular wharf by the Port of Houston. The latter type of construction is described in another issue of ENGINEERING NEWS-RECORD (Aug. 24, p. 43).

Below is cited a summary of major port construction projects obtained from a questionnaire sent out to members of The American Association of Port Authorities, Inc. This is not inclusive of all projects but is typical of work accomplished during 1950 and gives outline detail as to engineering criteria used in the design of these various projects.

• **Pier 57, New York**—Work began August 29, 1950, on the new $7,000,000 Pier 57 at the foot of West 15th Street in Manhattan, where the old Grace Line Pier had been destroyed in a devastating fire in September 1947. After removing the debris resulting from the fire, the first steps were dredging out the slips alongside old wooden piles left from the previous structure, then the 2300 piles will be cut off with an underwater saw, working 34.5 ft below mean low tide. This cutter is a chain saw fastened to the lower end of a vertical steel I-beam. The new pier will rest on "floating" concrete boxes which will be constructed elsewhere and towed to the pier site. After the old piles are cut to grade, a 2-ft layer of sand topped by a layer of gravel will be deposited over the area where the boxes are to rest.

• **Long Beach, Calif.**—The Port of Long Beach is modernizing three existing berths and constructing one new deep-water pier with 179,200 sf of new covered shedded area, all at a cost of about $2,060,000. It is also constructing a new cotton storage shed at a cost of $138,000, as well as several steel sheetpile bulkhead projects which will cost $5,700,000. A major one of these projects involves 130 acres of newly made land and 230 ft of deep-water bulkhead.

• **San Diego**—The Port of San Diego is constructing a $225,000 finger pier extension of the 28th St. Pier, as well as the first 672 ft of an 1100 ft by 600 ft pier at the foot of 10th St. The latter project involves an expenditure of about $400,000. On its Lindbergh Field, Municipal Airport, San Diego's 1950 program calls for modernization of the airport administration building ($120,000) and paving the airline apron ($122,000).

• **New Orleans**—The Port of New Orleans is reconstructing 350 ft of the existing Erato Street Wharf at a cost of $1,500,000, including new banana unloader and belt conveyors. It is also expending $1,500,000 on the land side extension to existing wharf house at the Public Commodity Warehouse. This project calls for about 120,000 sf of shedded area. The Esplanade Ave. Wharf was completed in May, and the St. Maurice Ave. Wharf in January.

• **Houston**—The Port of Houston is constructing a new Wharf 16, following the same type of steel sheetpile cellular construction used in the construction of its new Wharf No. 9, which was completed in March 1950. The new Wharf No. 16 is an open wharf of 122,000 sf, to cost about $850,000. The port also is constructing another open wharf, Manchester Wharf No. 3, at a cost of about $225,000. This wharf will be of a conventional creosoted wooden pile substructure type.

• **Baltimore**—The year 1950 was an active construction year at the Port of Baltimore, mainly in rehabilitation. Bethlehem Steel Co. rebuilt a graving dock at a cost of $700,000 and made extensions on two floating drydocks. The Baltimore and Ohio R.R. is constructing a new ore dock in Curtis Bay at a cost of $5,000,000. The Friendship International Airport was dedicated June 24, 1950. This airport represents an investment of $15,000,000. Long range plans contemplate duplicating the three existing runways.

• **Toledo, Ohio**—The Toledo Marine Terminals Inc. is designing a new transit shed estimated to cost $250,000.

• **San Francisco**—Two major construction projects were handled at this busy port during 1950. The Mission Rock Terminal was completed on July 6 at a cost of $4,217,000. It included two large transit sheds, each 150 ft wide. A contract for about $1,500,000 was awarded on July 7 for the alteration of Piers 30-32. The two transit sheds will each be 200 ft wide providing 380,000 sf of shedded area.

• **Port of New York Authority**—The Port of New York Authority plans or schedules to complete many construction projects in 1950, the more important of which are: Brooklyn—During 1950 a complete fire protection system will be installed on the 1250-ft Columbia Street Pier. Including repairs to the apron, clusters, and burtoning system, the cost will exceed $200,000; Port Newark—The entire Port Newark Channel and the Branch leading into Newark Bay is being deepened from 30 ft to 35 ft. The Port Authority is deepening the berthing areas within Port Newark.

Also at Port Newark a 1300-ft marginal wharf is being rehabilitated at a cost of $120,000 and a new timber catwalk 625 ft long is being constructed at a cost of $100,000. Over 3000 ft of concrete roads are being repaved at a cost of $125,000 and four miles of railroad tracks are being rehabilitated at a cost of $90,000. Two new transit sheds of modern design were completed in the early part of 1950 at a cost of $2,375,000.

Low Shrinkage, High Strength CONCRETE . . .

Standard Oil Co. Research Laboratory, Linden, N. J. Archt. — Voorhees, Walker, Foley & Smith; Gen. Contr. — George A. Fuller Co. — both of New York City. Pozzolith Concrete supplied by Thorn-Wilmerding Co., Linden, N. J. and Loizeaux Builders Supply Co., Elizabeth, N. J.

Outstanding Research Laboratory built with POZZOLITH CONCRETE

It is a significant fact that Pozzolith—a product born of research—has been used in the concrete work of a number of the nation's leading research laboratories.

The cement dispersing, water reducing action of Pozzolith produces, among other advantages, minimized shrinkage, high strength, low permeability and great durability . . . *at lower cost than by any other means.*

In addition to Pozzolith, other cement dispersion products used in the laboratory shown here, were:

MASTERPLATE—specially processed iron aggregate . . . for long-wearing, spark-safe "iron-clad" concrete floors.

"O. M." (Omicron Mortarproofing)—mortar admixture . . . effective aid in producing tight brick walls.

EMBECO—specially processed iron aggregate . . . for non-shrink grouts, and concrete reintegration.

Full information and literature on these products sent on request.

the MASTER BUILDERS Co.

CLEVELAND 3, OHIO TORONTO, ONTARIO

For every project that calls for paving

Texaco Asphalt's resilient, rugged, joint-free qualities pay off in durability, riding comfort, low upkeep

BRIDGE
Delaware River Bridge at Philadelphia

PARKWAY
Merritt Parkway, Connecticut

CITY STREET
Wilmington, N. C.

Here are six projects which called for paving to serve a variety of traffic conditions. They range from repaving a section of one of America's busiest bridges to the construction of a parking area for a popular bathing beach. In all six projects, the pavement laid was durable, economical Texaco Asphalt.

Whatever your own paving project, there is a type of Texaco Asphalt construction exactly suited to your conditions, including traffic. That has been the experience of road builders from the Atlantic to the Rockies for the past 45 years. Whether you select one of the Plant-mixed types of Texaco Asphalt paving or Texaco Asphalt Penetration Macadam, you will find they all have two things in common, the ability to stand up under the most punishing impact and a low maintenance cost.

For complete information on all types of Texaco Asphalt construction, write our nearest office for our two free booklets, "Texaco Asphalt Paving—Plant-Mixed Types" and "Road Building with Texaco by the Pressure Distributor Method."

STATE HIGHWAY
U. S. Route 81, Texas

PARKING AREA
Bar Beach, Long Island, N. Y.

AIRPORT
Worcester Municipal Airport, Mass.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

TEXACO REG. T. M.

TEXACO ASPHALT